Vol. 913 Number 1

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

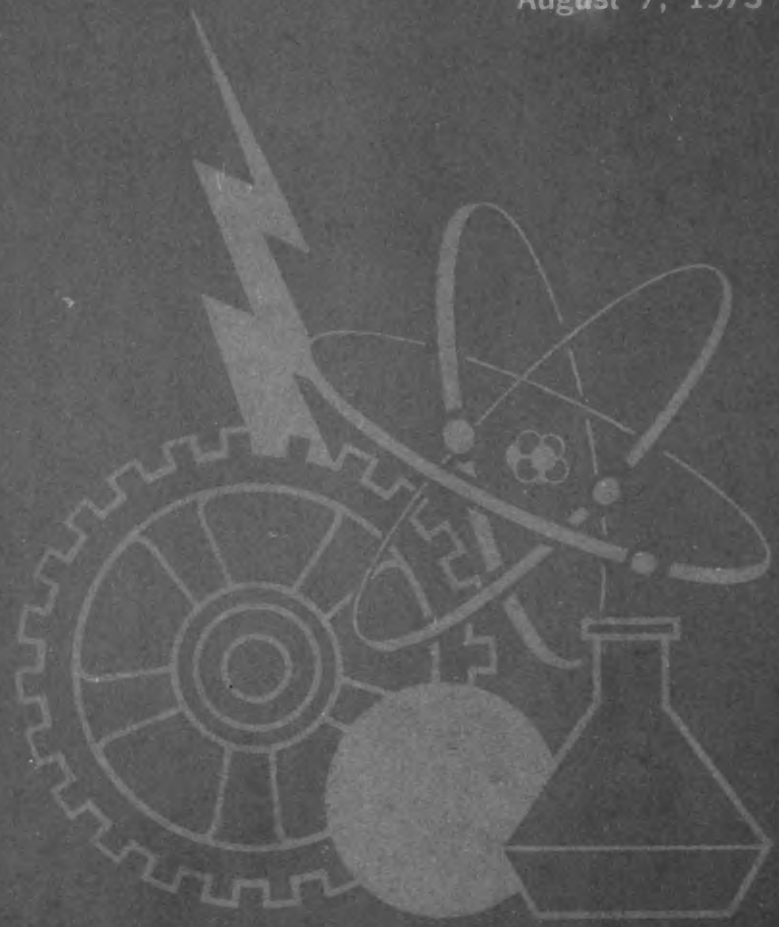
OFFICIAL GAZETTE

of the

UNITED STATES PATENT OFFICE

PATENTS

August 7, 1973



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 7, 1973 Volume 913 Number 1

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before August 31, 1973.

Brown, Richard A., 4548 Moorpark Ave., San Jose, Calif. 95129
Elliott, Robert M., 30 W. Vassar Ave., Denver, Colo. 80223
Garrett, James R., 417 Quaint Acres Drive, Silver Spring, Md. 20904
Kaufman, Milton, 211 Jefferson Davis Hwy., #618N, Arlington, Va. 22202
Kohlmann, Henry G., 125 Santa Dominga Ave., San Bruno, Calif. 94066
Mazel, Alex, 5120 4th St. NE., Washington, D.C. 20011
Miller, John H., 6674 W. Roxbury Place, Littleton, Colo. 80120
Quick, Louis J., 1560 Parkland Ave., San Jose, Calif. 95117
Steinberg, Jacob H., 2631 East West Hwy., Chevy Chase, Md. 20015.
Stitelman, Joseph, 2301 S. Jefferson Davis Hwy., #423, Arlington, Va. 22202.
Sutton, Michael O., 31770 Southview, Birmingham, Mich. 48009

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

Chapter 1—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Lawful Use for Supplemental Register and Size of Facsimiles

The Patent Office is revising §§ 2.47 and 2.57 of the trademark rules of practice. Section 2.47 is being revised to set forth that the year's use which is the basis for registration on the Supplemental Register must be lawful use. Existing § 2.47 states that the year's use for the Supplemental Register must be "continuous use," whereas section 23 of the Trademark Act of 1946 specifies that such use must be "lawful use." The purpose of this revision is to conform the wording of § 2.47 to the wording of the statute. This revision does not effect any change in practice, as in applying the rule the term "continuous use" has been treated as having the same meaning as the term "lawful use" in the statute.

Section 2.57 is being revised to set forth that facsimile-specimens are not to exceed 8½ inches wide and 13 inches long. Existing § 2.57 states that facsimiles shall be not larger than specified for the drawing. That statement is now incorrect due to a recent amendmen of the drawing length to 11 inches. The purpose of this revision is to correct the wording of §2.57, and to conform the wording of rule 2.57 to the wording of § 2.56 (Specimens) which has already been amended to specify that specimens are not to exceed 8½ inches wide and 13 inches long.

Since these revisions impose no burden on any person, notice and public procedures thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6, as amended October 5, 1971, 85 Stat. 364), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby revised as follows:

1. Section 2.47 is revised to read as follows:

§ 2.47 *Supplemental register.*

In an application to register on the Supplemental Register, the application shall so indicate and shall specify that the mark has been in lawful use in commerce, Specifying the nature of such commerce, by the applicant for the preceding year, if the application is based on such use. When an applicant requests registration without a full year's use of the mark, in accordance with the last paragraph of section 23 of the act, the showing required must be separate from the application.

(Sec. 23, 60 Stat. 435; 15 U.S.C. 1091)

2. Section 2.57 is revised to read as follows:

§ 2.57 *Facsimiles.*

When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8½ inches wide and 13 inches long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

Effective date. These revisions shall become effective on July 16, 1973.

Dated: July 5, 1973.

RENE D. TEGTMEYER,
Acting Commissioner of Patents.

Approved:
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 73-14453; Filed 7-13-73; 8:45 am]

Published in 38 F.R. 18876; July 16, 1973

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,040,679, R. S. Warntz, TUBULAR CENTER SILL FOR COVERED HOPPER AND LIKE CARS, **filed** Feb. 5, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73-257, *Welded Tube Company of America* v. *Frehauf Corporation.*

3,082,292, R. W. Gore, MULTICONDUCTOR WIRING STRIP; **3,540,956**, Arnold and Gore, PRECISE CONDUCTOR CABLES, **filed** Feb. 13, 1973, D.C., N.D. Ohio (Cleveland), Doc. C-73-163, *W. L. Gore & Associates, Inc.* v. *A.P. Inc.*

3,123,116, A. W. Hughes, EMULSIFIER; **3,221,788**, same; **3,318,353**, same, **filed** Feb. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c314, *Alvin W. Hughes and A. W. Hughes Company,* v. *Hobam, Incorporated.*

3,147,882, A. R. Waters, STACKING AND NESTING CONTAINER, **filed** Jan. 31, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73-C-47, *Alfred R. Waters* v. *G. B. Lewis & Co.*

3,206,688, M. J. Di Toro, APPARATUS FOR CORRECTING DISTORTION IN WAVE-SIGNAL TRANSLATING CHANNELS, **filed** Feb. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c315, *General Signal Corp.* v. *Bell Telephone Lab.*

3,209,080, Guttner, Starke, and Sapara, ELECTRICAL HEARING AID, **filed** Feb. 2, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c296, *Siemens Aktiengesellschaft* v. *Sonotone Corporation.*

3,221,707, L. B. Pearson, AUTOMATIC LIVESTOCK HEAD GATE, **filed** Apr. 18, 1972. D.C. Kans. (Wichita), Doc. W-4840, *Laurence B. Pearson* v. *Donald R. Richardson and Top Hands Products, Inc.* Stipulation for dismissal and order of dismissal, filed Feb. 12, 1973.

3,221,788. (See 3,123,116.)

3,318,353. (See 3,123,116.)

3,408,572, F. C. Marino, CONTROLLED AMPLITUDE FREQUENCY SHIFT SIGNAL GENERATOR, **filed** Sept. 12, 1969, D.C.N.J. (Newark), Doc. 1076-69, *Digitronics Corporation* v. *Marketing Systems, Inc.* Stipulation and order of dismissal of action, Dec. 26, 1972.

3,411,198, Berman, Thakkar, Schroeder and Kunsagi, EXPLOSIVE EXPANSION OF TUBES INTO TUBE SHEETS; **3,562,887,** Schroeder, Smith and Berman, EXPLOSIVE EXPANSION OF LINER SLEEVES, **filed** Feb. 6, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-247-HP, *Foster Wheeler Corporation* v. *Whittaker Corporation et al.*

3,450,212, A. G. Sylvester, MULTIPLE TOOTH SUB SOIL PLOW, **filed** Feb. 8, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72-86-C, *Cline Industries, Inc.* v. *James Harrison, doing business as Harrison Manufacturing Co.* Stipulation of dismissal with prejudice under Rule 41(a). Approved (Judge Luther Bohanon), Jan. 10, 1973.

3,469,557, D. L. Wollard, CHANNEL STERN POWER BOAT; **3,515,087,** R. B. Stuart, PLANING BOAT, **filed** May 19, 1972, D.C., S.D. Fla. (Miami), Doc. 71-5-C-WM, *Penn Yan Boats, Inc.* v. *Sea Lark Boats, Inc., Don's Marine Center, Inc. and Donald L. Wollard.* No. 3,469,557, valid as to claims 18, 19 and 20; defendant lawful owner. Plaintiff, Penn Yan Boats, Inc. has infringed, June 6, 1972.

3,508,091, R. J. Kavanaugh, DOUBLE CLAW TOOTH STATOR SYNCHRONOUS AND STEPPING MOTOR WITH INDICATOR, **filed** May 22, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1274, *North American Philips Corp.* v. *Molon Motor & Oil Corp.* On motion of plaintiff order complaint dismissed pursuant to Rule 41(a), Aug. 2, 1972.

3,513,668, M. Mintz, TUBULAR KNIT FABRIC, **filed** Apr. 24, 1972, D.C. (District of Columbia), Doc. 791-72, *Ripple Twist Mills, Inc.* v. *Industrial Knitting Corporation.* Same, **filed** July 10, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72-1337, *Ripple Twist Mills Inc.* v. *Industrial Knitting Corp.*

3,515,087. (See 3,469,557.)

3,538,848, W. P. Barbour, LATCH MEANS FOR A TRAVELING ROLLER PLATEN ON A SWINGABLE CARRIAGE; **D. 217,398,** same, IMPRINTER, **filed** Feb. 1, 1973, D.C. Del. (Wilmington), Doc. 4572, *Control Data Corporation* v. *Farrington Business Machines Corporation.*

3,540,956. (See 3,082,292.)

3,551,581, D. J. Goodman, WATER COOLED ELECTRIC CABLE, **filed** Sept. 28, 1971, D.C., E.D. Mich. (Detroit), Doc. 37167, *Sargent Industries of Michigan, Inc.* v. *Nu-Core, Inc.* Final consent judgment for permanent injunction signed by the Hon. Ralph M. Freeman, Aug. 30, 1972.

3,562,887. (See 3,411,198.)

3,563,088, L. R. Sperberg, NON-DESTRUCTIVE METHOD OF DETERMINING TIRE LIFE, **filed** Oct. 5, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-72-1067, *Lawrence R. Sperberg* v. *Firestone Tire & Rubber Co. et al.*

3,570,790, Christoffel and Phillips, METHOD OF MAKING A KITE AND KITE STRUCTURE, **filed** July 6, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1650, *Hi-Flier Manufacturing Co.* v. *Gayla Industries, Inc.*

3,625,512, Latham and Brefka, EXTRUDED RACKET HAVING TWO SEAMLESS HOLLOW TUBES FORMED WITH AN INTERCONNECTING WEB, **filed** Nov. 1, 1972, D.C. Mass. (Boston), Doc. C.A. 72-3344-T, *Paul Sullivan Sports, Inc.* v. *A. G. Spalding & Bros., Inc. and Questor Corporation.*

3,662,482, R. Sarkisian, POSTER DISPLAY DEVICE **filed** Nov. 13, 1972, D.C., M.D. Pa. (Scranton), Doc. 72-572, *Robert Sarkisian* v. *Thomas Display Holders, Inc.*

3,684,084, J. C. Kanzelberger, CONTAINER, **filed** Sept. 20, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2334, *Contemporary, Inc.* v. *Ronald T. Jedlinski, doing business as Roman's Religious Goods and Roman's Art & Goods.*

3,698,475, E. G. Beck, Jr., FLAT SHEET OF METAL HAVING AN ELONGATED MEMBER SECURED THERETO, **filed** Nov. 3, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2783, *Airtex Corp.* v. *Lumbermens Mutual Casualty Co.*

D. 217,398. (See 3,538,848.)

Certificates of Correction for the Week of July 31, 1973

P.P. 3,310	3,670,209	3,693,861	3,703,837	3,710,379	3,714,297	3,717,783	3,721,004
D. 225,994	3,670,769	3,693,961	3,703,950	3,710,439	3,714,479	3,717,853	3,721,155
3,352,131	3,672,260	3,694,395	3,704,152	3,710,715	3,714,537	3,718,005	3,721,246
3,458,719	3,672,766	3,694,472	3,704,391	3,710,962	3,714,545	3,718,023	3,721,301
3,543,486	3,673,138	3,694,686	3,704,798	3,710,980	3,714,637	3,718,066	3,721,474
3,553,537	3,674,680	3,694,709	3,704,959	3,710,982	3,714,804	3,718,101	3,721,601
3,581,706	3,674,768	3,695,247	3,705,030	3,711,186	3,714,826	3,718,238	3,721,629
3,593,535	3,676,076	3,695,835	3,705,187	3,711,231	3,714,878	3,718,268	3,721,701
3,594,424	3,677,813	3,695,911	3,705,242	3,711,257	3,714,885	3,718,332	3,721,754
3,598,601	3,681,040	3,696,038	3,705,297	3,711,382	3,714,890	3,718,407	3,721,847
3,603,495	3,681,041	3,696,170	3,705,597	3,711,390	3,714,954	3,718,452	3,721,904
3,609,393	3,681,368	3,696,176	3,705,948	3,711,412	3,715,036	3,718,479	3,721,961
3,624,101	3,681,432	3,696,385	3,706,241	3,711,522	3,715,165	3,718,500	3,721,964
3,625,062	3,682,649	3,696,928	3,706,465	3,711,526	3,715,221	3,718,612	3,722,163
3,628,721	3,682,650	3,696,975	3,706,554	3,711,536	3,715,390	3,718,615	3,722,178
3,631,033	3,682,926	3,697,392	3,706,672	3,711,587	3,715,530	3,718,637	3,722,647
3,631,479	3,683,008	3,697,699	3,706,893	3,711,589	3,715,576	3,718,686	3,722,713
3,632,814	3,683,015	3,698,041	3,707,050	3,711,594	3,715,602	3,718,701	3,722,787
3,637,582	3,683,028	3,698,371	3,707,071	3,711,642	3,715,612	3,718,738	3,722,936
3,637,767	3,683,038	3,698,629	3,707,191	3,711,852	3,715,676	3,718,743	3,722,959
3,639,200	3,683,088	3,699,139	3,707,388	3,712,084	3,715,923	3,719,160	3,722,994
3,639,852	3,684,429	3,699,207	3,707,537	3,712,101	3,715,980	3,719,169	3,723,029
3,639,867	3,684,760	3,699,550	3,707,583	3,712,165	3,716,031	3,719,194	3,723,083
3,643,441	3,685,249	3,699,897	3,707,636	3,712,462	3,716,047	3,719,413	3,723,168
3,647,806	3,686,183	3,700,569	3,707,774	3,712,476	3,716,053	3,719,526	3,723,185
3,648,117	3,686,236	3,700,658	3,708,221	3,712,543	3,716,062	3,719,566	3,723,188
3,650,945	3,686,246	3,700,659	3,708,304	3,712,943	3,716,107	3,719,618	3,723,197
3,652,604	3,686,312	3,700,666	3,708,364	3,713,001	3,716,208	3,719,810	3,723,217
3,654,442	3,686,356	3,700,724	3,708,423	3,713,005	3,716,307	3,720,048	3,723,263
3,656,321	3,686,518	3,700,779	3,708,499	3,713,042	3,716,328	3,720,068	3,723,304
3,657,223	3,686,750	3,701,113	3,708,504	3,713,213	3,716,373	3,720,114	3,723,330
3,657,539	3,687,189	3,701,142	3,708,522	3,713,347	3,716,522	3,720,152	3,723,359
3,658,785	3,687,967	3,701,161	3,708,575	3,713,348	3,716,572	3,720,285	3,723,497
3,658,918	3,688,657	3,701,405	3,708,828	3,713,352	3,716,580	3,720,435	3,723,501
3,659,650	3,688,811	3,701,666	3,709,035	3,713,386	3,716,639	3,720,507	3,723,567
3,660,979	3,689,164	3,701,783	3,709,476	3,713,579	3,716,731	3,720,536	3,723,969
3,661,483	3,689,284	3,701,915	3,709,477	3,713,852	3,716,771	3,720,609	3,724,118
3,662,073	3,689,619	3,701,945	3,709,557	3,713,853	3,716,773	3,720,614	3,724,653
3,663,250	3,689,974	3,702,364	3,709,639	3,713,863	3,716,864	3,720,625	3,724,790
3,663,468	3,690,303	3,702,460	3,709,706	3,713,968	3,717,355	3,720,643	3,725,182
3,663,584	3,690,832	3,702,471	3,709,799	3,714,054	3,717,358	3,720,654	
3,663,759	3,692,840	3,702,747	3,709,805	3,714,095	3,717,434	3,720,671	
3,665,796	3,692,859	3,702,749	3,709,894	3,714,127	3,717,436	3,720,682	
3,666,474	3,692,986	3,702,766	3,709,969	3,714,132	3,717,515	3,720,705	
3,669,503	3,693,064	3,702,997	3,710,039	3,714,141	3,717,544	3,720,754	
3,669,961	3,693,338	3,703,088	3,710,270	3,714,165	3,717,610	3,720,841	
3,669,965	3,693,485	3,703,134	3,710,376	3,714,245	3,717,612	3,720,912	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Virginia 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231 at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents, Washington, D.C. 20545

Patent 3,678,512. Telemonitoring System. Filed Oct. 21, 1970. Patented July 18, 1972. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Streets NW., Washington, D.C. 20240

Patent application 350,444. Determination of Sulfate Using Ferric Ion-Selective Electrode. Filed Apr. 12, 1973. PC $3/MF $1.45.

Patent application 345,932. Production of Methane From Refuse and Sewage Sludge. Filed Mar. 29, 1973. PC $3/MF $1.45.

[FR Doc. 73-14510; Filed 7-17-73; 8:45 am]

Certificates of Correction for the Week of August 7, 1973

Re. 27,543	3,666,844	3,686,339	3,695,364	3,706,678	3,712,063	3,716,260	3,721,853
Re. 27,563	3,668,192	3,686,361	3,696,092	3,707,194	3,712,064	3,716,506	3,721,888
D. 223,875	3,668,423	3,686,872	3,696,167	3,707,196	3,712,207	3,716,703	3,721,960
D. 226,137	3,668,997	3,687,008	3,696,346	3,707,424	3,712,457	3,716,817	3,722,051
D. 226,445	3,669,000	3,687,720	3,696,943	3,707,475	3,712,592	3,716,858	3,722,161
3,380,974	3,670,179	3,687,725	3,697,318	3,707,679	3,712,649	3,716,887	3,722,369
3,411,383	3,671,144	3,687,897	3,697,502	3,707,901	3,712,697	3,717,048	3,722,563
3,491,190	3,671,575	3,687,952	3,697,529	3,707,962	3,712,795	3,717,066	3,722,758
3,537,823	3,673,151	3,687,994	3,698,249	3,707,990	3,712,843	3,717,080	3,722,886
3,549,607	3,673,981	3,687,998	3,698,843	3,708,219	3,712,879	3,717,307	3,723,257
3,561,985	3,674,767	3,688,063	3,699,082	3,708,377	3,713,288	3,717,562	3,723,406
3,563,773	3,675,077	3,688,590	3,699,102	3,708,458	3,713,314	3,717,587	3,723,430
3,567,699	3,676,384	3,688,798	3,699,156	3,708,497	3,713,497	3,717,650	3,723,551
3,579,599	3,678,123	3,688,958	3,700,104	3,708,517	3,713,593	3,717,786	3,723,729
3,587,801	3,678,677	3,689,697	3,700,826	3,708,641	3,713,809	3,717,828	3,723,751
3,592,508	3,678,752	3,689,700	3,700,974	3,708,644	3,713,883	3,717,848	3,723,838
3,595,630	3,678,975	3,689,726	3,701,337	3,708,749	3,714,030	3,718,543	3,723,959
3,602,591	3,679,248	3,689,750	3,701,408	3,709,133	3,714,178	3,718,752	3,724,285
3,604,456	3,679,427	3,689,752	3,702,085	3,709,273	3,714,184	3,718,696	3,724,442
3,609,162	3,680,160	3,689,938	3,702,322	3,709,485	3,714,243	3,718,723	3,724,576
3,615,432	3,681,361	3,690,090	3,702,978	3,709,814	3,714,454	3,719,271	3,724,618
3,616,254	3,681,369	3,690,227	3,703,137	3,709,891	3,714,455	3,719,989	3,724,886
3,616,259	3,682,935	3,690,269	3,703,534	3,709,945	3,714,510	3,720,031	3,725,271
3,619,359	3,682,997	3,690,454	3,704,231	3,710,135	3,714,518	3,720,233	3,725,279
3,624,123	3,683,016	3,690,563	3,704,245	3,710,238	3,714,558	3,720,300	3,725,292
3,625,728	3,683,179	3,691,159	3,704,280	3,710,312	3,714,579	3,720,601	3,725,369
3,632,582	3,683,659	3,691,273	3,704,596	3,711,028	3,714,610	3,720,610	3,725,792
3,636,428	3,684,656	3,692,526	3,704,935	3,711,115	3,714,617	3,720,686	3,725,797
3,636,520	3,684,872	3,692,532	3,705,003	3,711,254	3,714,778	3,720,696	3,725,983
3,640,112	3,685,033	3,692,634	3,705,037	3,711,342	3,714,868	3,721,000	3,726,086
3,641,551	3,685,093	3,692,882	3,705,409	3,711,408	3,715,228	3,721,060	3,726,638
3,651,082	3,685,129	3,693,062	3,705,445	3,711,573	3,715,477	3,721,062	3,727,003
3,655,398	3,685,224	3,693,339	3,705,544	3,711,580	3,715,486	3,721,220	3,739,653
3,655,581	3,685,258	3,693,491	3,705,649	3,711,582	3,715,542	3,721,250	
3,655,737	3,685,420	3,693,867	3,705,758	3,711,691	3,715,582	3,721,347	
3,656,296	3,685,499	3,694,454	3,705,794	3,711,720	3,715,633	3,721,470	
3,663,213	3,685,546	3,694,768	3,705,913	3,711,743	3,715,764	3,721,509	
3,665,074	3,685,580	3,695,019	3,706,037	3,711,748	3,715,867	3,721,548	
3,665,598	3,686,173	3,695,052	3,706,592	3,711,908	3,716,059	3,721,574	
3,666,775	3,686,325	3,695,178	3,706,634	3,711,971	3,716,451	3,721,582	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 21, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-30-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-01-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-03-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-24-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-06-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-13-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-02-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-23-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-13-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	11-17-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-02-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	7-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-16-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-15-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-14-72

Expiration of patents: The patents within the range of numbers indicated below expire during August 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,757,378 to 2,761,141, inclusive
Plant Patents..... Numbers 1,505 to 1,508, inclusive

REISSUES

AUGUST 7, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

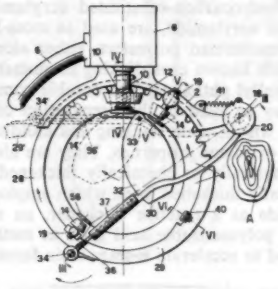
27,716
ANNULAR SAW WITH CIRCULAR SAFETY GUARD

Ermanno Santilli, Via Virgilio Ramperti 19, Rome, Italy

Original No. 3,438,410, dated Apr. 15, 1969, Ser. No. 567,620, July 25, 1966. Application for reissue Mar. 23, 1971, Ser. No. 127,158

Int. Cl. B27b *5/14, 5/30*

U.S. Cl. 30—389 25 Claims



A circular safety guard for an annular saw, said saw being driven by conical rollers about an imaginary axis. A portion of the tooth periphery of the saw blade is permanently concealed within the saw casing, and nearly all of the rest of the periphery is at first concealed within the guard, a portion of said guard being slidably retractable within the casing to expose the blade teeth as the workpiece advances towards the center of the saw, so as to expose just enough of the tooth periphery to accomplish the desired cutting.

27,717
FLUID JET PROCESS FOR TWISTING YARN

Alvin Leonard Breen, West Chester, Pa., and Martin Victor Sussman, Istanbul, Turkey, by E. I. du Pont de Nemours and Company, Wilmington, Del., assignee

Original No. 3,279,164, dated Oct. 18, 1966, Ser. No. 810,671, May 4, 1959. Application for reissue Aug. 19, 1971, Ser. No. 114,899

Int. Cl. D02g *1/02, 1/16*

U.S. Cl. 57—157 TS 17 Claims

1. A process for twisting a filamentary strand which comprises continuously directing a jet of compressible fluid at at least ½ sonic velocity against the periphery of successive substantially straight portions of the filamentary strand constrained so that the strand, under the action of the fluid jet, moves in a rotary twisting motion, twisting the strand at a rate equivalent to at least 200,000 turns per minute.

27,718
PROCESS FOR PREPARING UNSATURATED NITRILES

Kurt Sennewald and Wilhelm Vogt, Knapsack, near Cologne, Joachim Kandler, Bruhl, near Cologne, Rolf Sommerfeld, Stetten, Remstal, and Günter Sorbe, Bruhl, near Cologne, Germany, by Knapsack-Griesheim Aktiengesellschaft, Knapsack, near Cologne, Germany, assignee

Original No. 3,226,422, dated Dec. 28, 1965, Ser. No. 361,931, Apr. 15, 1964, which is a continuation-in-part of abandoned application Ser. No. 155,309, Nov. 28, 1961. Application for reissue Aug. 1, 1972, Ser. No. 276,968

Claims priority, application Germany, Dec. 7, 1960, K 42,344

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 5 Claims

A process for preparing unsaturated nitriles by reacting olefins with oxygen and ammonia in the presence of a catalyst consisting of Fe_2O_3, Bi_2O_3, MoO_3 and P_2O_5, with an atomic proportion of the oxide forming elements of $Fe_{1.0}Bi_{1.0}Mo_{1.3}P_{0.16}$.

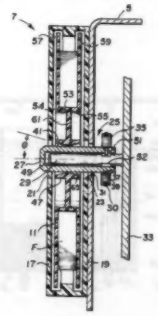
27,719
REEL FOR CARTRIDGE-LOADING MOTION PICTURE PROJECTORS

Edward S. McKee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 3,486,710, dated Dec. 30, 1969, Ser. No. 731,463, May 23, 1968. Application for reissue Feb. 8, 1971, Ser. No. 113,526

Int. Cl. B65h *75/14*

U.S. Cl. 242—71.8 3 Claims



A reel adapted to be contained in a cartridge and to be mounted on a spindle of a motion picture projector comprises a hub having a bore tapered inwardly from the ends of the hub towards its center, such that the reel can orient itself within the cartridge obliquely with respect to the projector spindle.

27,720

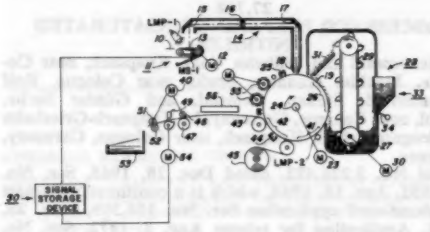
SIGNAL STORAGE DEVICE

Richard C. Hansen, Rochester, and Andrew P. Yesul, Jr., Penfield, N.Y., by The Xerox Corporation, Stamford, Conn., assignee

Original No. 3,416,861, dated Dec. 17, 1968, Ser. No. 566,333, July 19, 1966. Application for reissue Mar. 27, 1972, Ser. No. 238,701

Int. Cl. G03g *15/00*

U.S. Cl. 355—13 8 Claims



This invention relates to a device for the mechanical storage of electrical signals adapted for time delayed switching of utilization apparatus. More specifically, the invention relates to a signal storage device for controlling the operation of a web cutter in a document recording apparatus to effect web cutting in spaced relation to recordings thereon from stored signals generated previously by the original documents of which the recordings were formed.

27,721

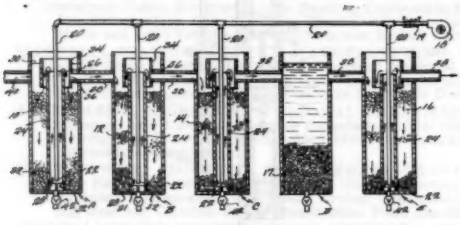
METHOD AND APPARATUS FOR TREATING WASTE-CONTAINING LIQUOR

John W. Klock, Tempe, Ariz., assignor to Research Corporation, New York, N.Y.

Original No. 3,563,888, dated Feb. 16, 1971, Ser. No. 754,341, Aug. 21, 1968. Application for reissue July 23, 1971, Ser. No. 165,755

Int. Cl. C02c *1/04*

U.S. Cl. 210—14 18 Claims



Waste-containing liquor is biochemically treated by continuously recirculating it through a sand-gravel filter media which is submerged in the liquor while continuously withdrawing a small portion of said liquor. A pressurized column of oxygen-containing fluid entrains and lifts the liquid waste through an unobstructed tube and recirculates it downwardly through the filter media. During the lifting process oxygen from the fluid permeates the waste in order to ensure active aerobic metabolism. The treated effluent is directed to a storage area, or preferably it is conveyed to another tank for further treatment.

27,722

CROSSLINKING OF UNSATURATED POLYESTERS WITH N-3-OXOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

Thomas C. Jennings, Willowick, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Original No. 3,616,370, dated Oct. 26, 1971, Ser. No. 5,105, Jan. 22, 1970, which is a continuation-in-part of abandoned applications Ser. No. 801,794, Feb. 24, 1969, and Ser. No. 877,041, Nov. 14, 1969. Application for reissue Jan. 24, 1972, Ser. No. 220,500

Int. Cl. C08f *21/00, 21/02*

U.S. Cl. 204—159.15 24 Claims

N-3-oxohydrocarbon-substituted acrylamides, especially diacetone acrylamide, are used as cross-linking monomers for unsaturated polyesters, either alone or in combination with known cross-linking monomers such as styrene and diallyl phthalate. The curable compositions thus formed may be used in the preparation of nonblocking "prepregs" which, upon stacking and molding, form laminates with excellent properties. They are also suitable for forming physically or chemically thickened premixes. In the chemically thickened ones, which employ a metal salt or hydroxide as a reactive thickener, an acidic reagent (usually a polymerizable acid such as methacrylic acid) may be used to accelerate B-stage resin formation.

27,723

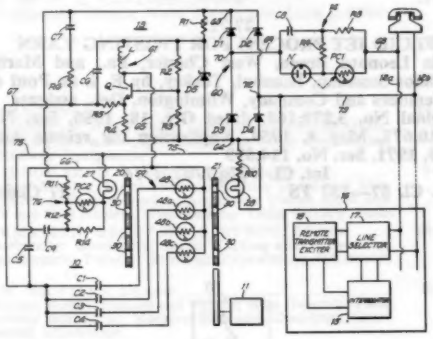
RADIATION SENSITIVE POSITION ENCODER USING CODED DISCS

Victor E. Stewart, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Original No. 3,491,244, dated Jan. 20, 1970, Ser. No. 691,020, Dec. 15, 1967. Application for reissue June 17, 1971, Ser. No. 154,231

Int. Cl. G01n *21/30;* H01j *39/12*

U.S. Cl. 250—219 DD 13 Claims



A position encoder for use in an automatic remote meter reading system and including a pair of coded discs disposed in a parallel relation and each having an array of position coding elements. A plurality of photocells are disposed between the discs and are arranged to be selectively energized from their opposite sides by individual illuminating means associated with each disc. The presence or absence of illumination on each photocell

is operative to modify the parameters of an oscillating circuit so that a different tone signal will be provided to an interrogator for each position of the coded discs.

27,724

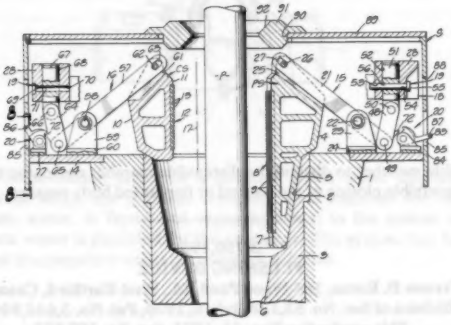
POWER DRILL PIPE AND DRILL COLLAR SPIDER

Noal E. Johnson, Humble, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

Original No. 3,571,865, dated Mar. 23, 1971, Ser. No. 863,777, Oct. 6, 1969. Application for reissue June 20, 1972, Ser. No. 264,697

Int. Cl. E21b *3/04*

U.S. Cl. 24—263 DG 14 Claims



Power drill pipe and drill collar spider apparatus in which drill pipe slip elements and drill collar slip elements are selectively connectable to an actuator ring, the actuator ring being movable between positions at which either the drill pipe slip elements or the drill collar slip elements are disposed in the slip bowl or are retracted from the slip bowl, while the other of the slip elements are latched in retracted positions.

27,725

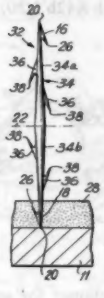
SELF-GRIPPING FASTENING DEVICE

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Original No. 3,494,006, dated Feb. 10, 1970, Ser. No. 697,527, Jan. 12, 1968. Application for reissue Feb. 8, 1972, Ser. No. 224,630

Int. Cl. A44b *9/00, 19/00*

U.S. Cl. 24—204 6 Claims



A self-gripping fastening device for connecting together a pair of articles, only one of which is required to be provided with the device. The device comprises a plurality of barbed fastening elements, each being secured at one end to one surface of one of the articles to be gripped. When the fastening device is pressed against the opposing surface of the other article to be gripped, the free ends of the fastening elements penetrate and lodge in the other article to thereby effect adhesion between the pair of articles.

27,726

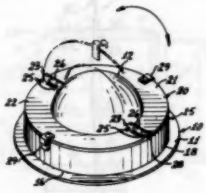
WITHDRAWN

PATENTS

GRANTED AUGUST 7, 1973

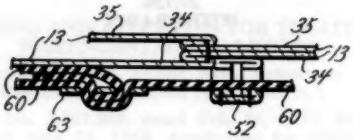
GENERAL AND MECHANICAL

3,750,192
HAT-MOUNTED CONTAINER FOR ACCESSORIES
John I. Beresic, 2900 W. Lincoln, Phoenix, Ariz.
Filed Aug. 6, 1971, Ser. No. 169,763
Int. Cl. A42b *1/20*; A42c *5/00*
U.S. Cl. 2—185 R **11 Claims**



A hat-mounted container for small accessories usable in sports and specialized types of work wherein the container fits around the crown of the hat.

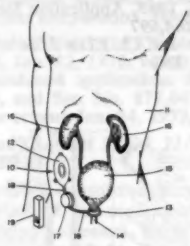
3,750,193
PANTS
Ann V. Cooke, St. Louis, Mo., assignor to The Grove Company, St. Louis, Mo.
Filed Sept. 29, 1971, Ser. No. 184,793
Int. Cl. A41d *1/06*
U.S. Cl. 2—237 **6 Claims**



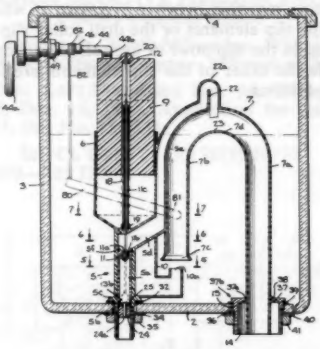
A pant garment primarily for women having a top section positioned around the hips between the waist and place of maximum hip measurement, the top section having a tunnel across the back extending from one side of the pant to the other, a plurality of belt loops spaced across its front, and openings at its sides to the tunnel. A belt holds the top section around the hips and is threaded through the belt loops and tunnel. The top section is tapered and the belt elastic to conform to the curvature of the hips and the lower back of the body.

3,750,194
APPARATUS AND METHOD FOR REVERSIBLY CLOSING A NATURAL OR IMPLANTED BODY PASSAGE
George D. Summers, Bethesda, Md., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Mar. 16, 1971, Ser. No. 124,718
Int. Cl. A61f *1/00, 1/24*; A61b *17/00*
U.S. Cl. 3—1 **9 Claims**

An apparatus and method for reversibly closing a natural or implanted body passage which utilize an implantable fluid reservoir and a distensible member that is adapted to be connected to the natural or implanted body passage. An implantable pump is connected to the fluid reservoir and the distensible member for pumping fluid from the reservoir to the distensible member to distend the distensible member and cause the reversible closing of the natural or implanted body passage.



3,750,195
FLUSHING DEVICE
Vernon D. Roosa, 184 Wood Pond Rd., West Hartford, Conn.
Division of Ser. No. 53,170, July 8, 1970, Pat. No. 3,644,940.
This application Nov. 11, 1971, Ser. No. 197,812
Int. Cl. E03d *1/04, 1/06*
U.S. Cl. 4—45 **5 Claims**

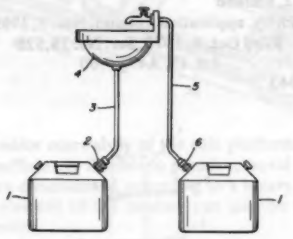


A flushing device for toilets having a float directly connected to the movable part of an inlet valve to form a unitary moving element. A siphon empties the flush tank and becomes inactive until a full tank is flushed again. When the float, which is slidably mounted in a chamber, is forced down for flushing, it forces water from the float chamber into the siphon either alone or with water from the inlet valve, to start a siphoning action to empty the flush tank. At the same time the float opens the inlet valve to supply additional water to start the siphon and to keep the valve open until the flush tank is refilled at which time the float has been raised to its normal position. Provisions are made for preventing a reverse flow from the tank into the inlet pipe during failure of the water supply and for filling the toilet bowl to the desired level at the end of the flushing operation. Provision is also made for conserving water by flushing a predetermined quantity of water for solids and considerably less water for liquids and by providing means for regulating the amount of water to be flushed by the flushing unit.

3,750,196
WASTE WATER HOLDER SYSTEM

Donald William Halferty, Munster, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 23, 1971, Ser. No. 211,437
Int. Cl. A47k *1/04*
U.S. Cl. 4—166 9 Claims

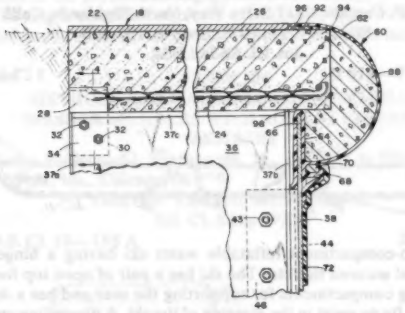


The invention concerns a portable waste water disposal system which has a plastic container as a reservoir for the waste water. A liquid and vapor tight seal to the source of waste water is provided for the container. The system may be used in campers or other recreational vehicles.

3,750,197
SWIMMING POOL AND DECK

Donald H. Weir, and Donald H. Witte, both of York, Pa., assignors to Fox Pools, Inc., York, Pa.

Filed Apr. 6, 1971, Ser. No. 131,638
Int. Cl. E04h *3/16*, *3/18*
U.S. Cl. 4—172.19 24 Claims

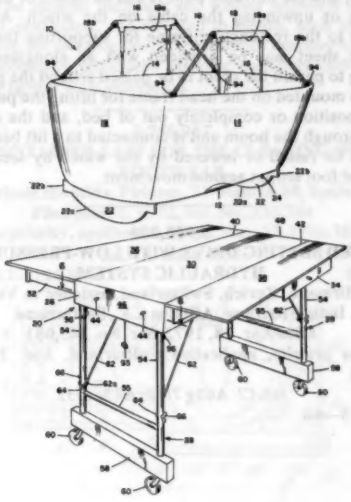


A swimming pool comprising a sidewall formed from connected sheets extending substantially vertically, a continuous deck extending around the pool and comprising a series of modular panels connected together at the ends thereof to provide rigidity and integrated with said side wall by coping means which connect the edges of said deck panels nearest the pool to the upper edges of said sidewall panels to provide an articulated rigid structure composed of components which can be fabricated in a factory, packaged and shipped to an installation site for erection. Several different types of copings are used respectively for side portions of the pool which are straight and side portions of a free form, i.e., curved, nature. Simple perpendicular supporting members support the deck panels vertically and the sidewalls horizontally.

3,750,198
CRIB AND TABLE COMBINATION

Samuel E. Brown, 201 N. Sparks, Belton, Tex.

Filed June 15, 1972, Ser. No. 263,283
Int. Cl. A47c *27/08*, *13/38*
U.S. Cl. 5—2 R 9 Claims

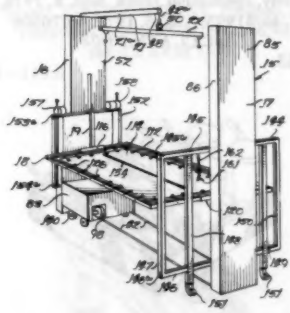


A baby crib and infant table combination is provided whereby the crib is adapted to seat upon the table top and is releasably attached to the table by retractable locking lugs. In one embodiment of the invention, the table carries foldout table top extension sections and folding legs which are pivotable from a first locked downward position to a second locked folded position wherein they are substantially parallel to the table top. Handle assemblies are provided to lift and suspend the crib and the table when attached thereto.

3,750,199
INVALID LIFT APPARATUS

Joseph W. Spivey, Lake Wales, Fla., assignor to Mercy-Lift, Inc., Lake Wales, Fla.

Filed July 16, 1971, Ser. No. 163,165
Int. Cl. A61g *7/10*, *1/02*
U.S. Cl. 5—63 5 Claims



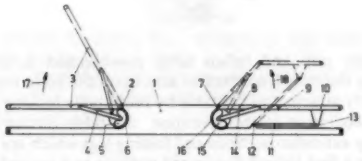
An invalid lift apparatus for raising an invalid or hospital patient from bed. The apparatus includes a generally horizontally extending rectangular frame which may be raised and lowered by head and foot scopes which are supported by head and foot frames. Each of the scopes includes a vertically extending tubular support which is telescopingly mounted on a

tubular member within the frame and which supports one end of the rectangular frame. A pair of stationary pulleys are rotatably mounted within each of the head and foot frames, and a movable pulley is rotatably mounted below the stationary pulleys for movement with the tubular member. A cable is reaved over the three pulleys of each frame and connected to a winch, and the movable pulleys can be raised or lowered by winding or unwinding the cable on the winch. A sheet is secured to the rectangular frame for supporting the patient, and the sheet may be provided with an elongated central opening to permit the sheet to be passed around the patient. A boom is mounted on the head frame for lifting the patient to a sitting position or completely out of bed, and the cable extends through the boom and is connected to a lift bar. The lift bar can be raised or lowered by the winch by securing the head and foot scopes against movement.

3,750,200
BED SETTING DRIVE WITH LOW-PRESSURE HYDRAULIC SYSTEM

Georg Hirmann, Zurich, Switzerland, assignor to Veenendaal & Co. Industriestrasse, Affolten a.A., Switzerland

Filed Apr. 18, 1972, Ser. No. 245,081
Claims priority, application Switzerland, Apr. 19, 1971, 5415/71
Int. Cl. A61g 7/10; A47c 3/32
U.S. Cl. 5—66 **9 Claims**

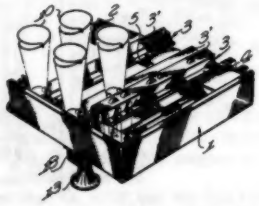


e.g. device for hydraulically setting the position of a bed which includes a large diameter inflatable hose to which is connected a source of low-pressure water, e.g., from the main water supply. Inflation of the hose serves to move an element in contact with the hose surface and this element controls the position of the bed.

3,750,201
BOTTOM BED STRUCTURE

Nobuo Usami, 6-5-3 Ikegami, Ohtaku, Tokyo, Japan

Filed Sept. 8, 1971, Ser. No. 178,733
Claims priority, application Japan, Sept. 8, 1970, 45/89714; May 25, 1971, 46/41993; Aug. 5, 1971, 46/70006
Int. Cl. A47c 23/04
U.S. Cl. 5—263 **3 Claims**

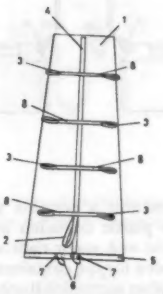


A bottom bed structure includes a rectangular bottom bed frame having supported thereon a plurality of coil springs and a plurality of beam members having pressed out portions forming protruding resilient lip portions. A pair of oppositely positioned lip portions receives the lowest spring coil turn and fixedly secures the coil turn in the spacing formed between the lower surfaces of a pair of oppositely positioned protruding resilient lip portions and the upper surface of the beam member. The resilient lip portions make frictional contact with the lowest spring coil turn.

3,750,202
SLEEPING BAG

Pauli Assar Antero Merikallio, Iso-Robertinkatu 49-31 A 7, Helsinki 12, Finland

Claims priority, application Finland, Nov. 5, 1969, 3199/69
Filed Oct. 6, 1970, Ser. No. 78,528
Int. Cl. A47g 9/00
U.S. Cl. 5—343 **1 Claim**



A sleeping bag is made of a fabric consisting of a thin and flexible material impermeable to water, at least one side of the fabric being metallically shiny. The bag can be closed by a draw-band provided at its opening. A strong strip of webbing is attached centrally to an outer surface of the bag and extends in its longitudinal direction. Spaced transverse bands are attached to the strip and to the fabric. Their ends are provided with loops, so that two rows of loops are formed. The loops may be used for carrying the bag.

3,750,203
INFLATABLE WATER SKI

Alberto P. Ceccato, 6217 Belva Way, North Highlands, Calif.

Filed Nov. 11, 1971, Ser. No. 197,653
Int. Cl. A63c 15/04
U.S. Cl. 9—310 D **1 Claim**

A two-compartment inflatable water ski having a hinged rigid keel secured thereto. The ski has a pair of open top foot receiving compartments for supporting the user and has a depending fin to assist in the steering of the ski. A depending cup at the forward end of the ski assists in using the ski for walking on the water. A pair of ski poles having inflated inverted cup-shaped members on the lower ends are used for steadying the user when using the skis for walking on the water. The two compartments are formed by either a transverse partition or a longitudinal partition with each compartment having a separate inflating valve.

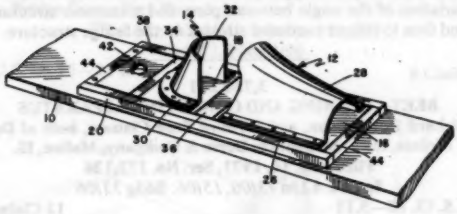
3,750,204
BINARY ADJUSTMENT FOR WATER SKIS

William R. Walter, 3247 Geddes Dr., San Diego, Calif.

Filed Oct. 4, 1971, Ser. No. 186,148
Int. Cl. A63c 15/06
U.S. Cl. 9—310 AA **5 Claims**

A water ski binding featuring simplified adjustability of at least the counter element for the heel forwardly and rear-

wardly within a chase defined by a pair of parallel spaced rails which laterally retain a base slide or sole platform portion of the counter element, the same being held in adjusted position by a set of spacer blocks interchangeably inserted in the chase

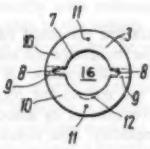


forwardly and/or rearwardly of the sole platform. The spacer blocks are sufficiently flexible to permit removal and replacement and are dimensioned according to a binary progression. The vamp element of the binding can also be similarly adjusted, if desired.

3,750,205
LIFE PRESERVER

Georg Pfeifer, Waldweg 63, Thune, Germany

Filed Aug. 23, 1971, Ser. No. 173,814
Claims priority, application Germany, Feb. 24, 1971, P 21 08 666.8
Int. Cl. B63c 9/08
U.S. Cl. 9—345 **4 Claims**

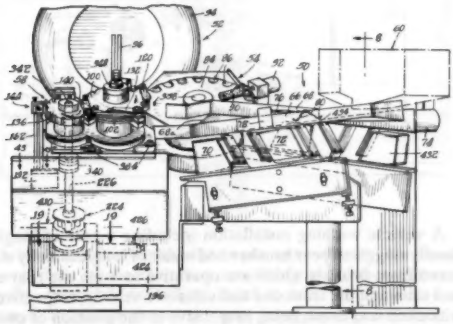


A buoyancy device, especially for persons learning to swim in the form of a buoyant ring adapted to be placed over the head of the person and engage the chin and nape of the neck. The ring is either inflatable or of a material lighter than water, and has an inner slit to enable the person to put his hand in it.

3,750,206
METHODS AND MACHINES FOR ASSEMBLING WASHER MEMBERS WITH ROTARY FASTENER MEMBERS

Henry Pomernacki, Northbrook, Ill., assignor to Illinois Tool Work, Inc., Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,942
Int. Cl. B23p 19/08
U.S. Cl. 10—155 A **23 Claims**

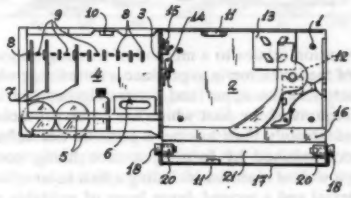


The present invention relates generally to improvements in methods and machines for assembling washer members with rotary fastener members. The machine embodiment of the invention disclosed herein includes means for cascading an indiscriminately arranged supply of washer members to a rotary disc for feeding properly oriented washer members along a circular path to an assembly station. Rotary fastener members such as screw blanks are directed from an indiscriminately arranged supply thereof along a different path to said assembly station. The fastener members and washer members are telescopically associated, and directed to means, such as thread rolling dies, for swaging the rotary fastener member to secure the telescopically associated fastener members and washer members against axial separation.

3,750,207
CONTAINER-LAST FOR THE CLEANING OF FOOTWEAR

Felipe Urioste Hermida, Pirineos, 21-Madrid-20, Spain

Filed Mar. 8, 1972, Ser. No. 232,784
Claims priority, application Spain, Mar. 12, 1971, 166905
Int. Cl. A43d 3/00
U.S. Cl. 12—128 H **9 Claims**

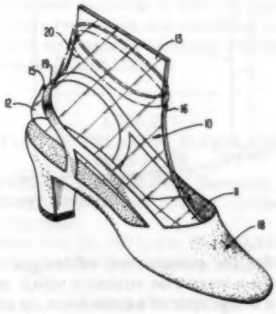


The present invention relates to a combined container and last specially designed to facilitate the cleaning of footwear. The container consists of a special metal cupboard which is fixed directly to the wall and which is fitted with two front covers; one exterior cover which can rotate on a lower horizontal shaft and which on being opened and situated in its horizontal limiting position is converted into a tray for the collection of dust, and another interior cover which is vertically hinged on one side, and which can move through 180°, thus enabling the user to see its inner face to which there is attached a series of special supports to hang the corresponding applicator and cleaning brushes. On the back wall there is a hanger to hold an articulated last in a position of rest which enables the container to be closed, and an anchor-piece on which the said last is arranged in a position for use, that is to say perpendicular to the bottom of the container.

3,750,208
DISPLAY FORM FOR FOOTWEAR

William P. Wyatt, 1711 Sturbridge Pl., Crofton, Md.

Filed Sept. 1, 1971, Ser. No. 176,913
Int. Cl. A43d 5/00
U.S. Cl. 12—115.8 **9 Claims**



A one-piece resilient sheet material display form is insertable into shoes of various sizes and will remain erect under ten-

sion without the necessity for fastening or anchoring attachments. The flexible straps and lacings of footwear are supported on the form in a practical manner and the form may bear advertising indicia. The form is preferably transparent and formed of plastic. A second embodiment is formed of wire for similar purposes.

3,750,209

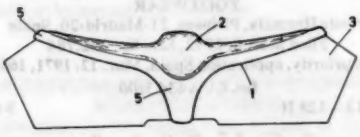
METHOD OF FORMING A SHOE LINING

Adolf Dassler, 8522 Herzogenaurach, am Bahnhof, Germany

Filed Mar. 6, 1972, Ser. No. 231,960

Int. Cl. A43d ; A43b *19/00*

U.S. Cl. 12—146 C **10 Claims**



The invention relates to a method of forming a shoe lining. The aim of the invention is to produce a shoe lining which can be connected to the upper and accurately brought into line with the regions of the foot which are to be protected more simply and cheaply than has been possible heretofore. This aim is accomplished by forming a shoe lining comprising providing a web of material including a first layer of weldable foam material and a second dense layer of weldable material overlying the first area, effecting a pressing and heating treatment over a substantial area of the first layer to fuse the foam and make this area dense, while leaving a portion of the first layer untouched to form a cushion.

3,750,210

APPARATUS FOR THE CONSTRUCTION OF BRIDGES

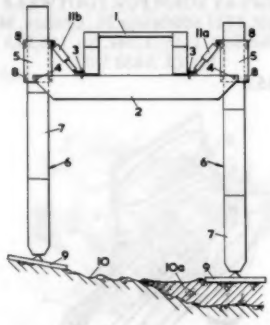
John Maries Herbert Barnard, Milford-on-Sea; Derek Ian Knight, and Eric Longbottom, both of Bournemouth, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 4, 1971, Ser. No. 168,965

Claims priority, application Great Britain, Aug. 13, 1970, 39,047/70

Int. Cl. E01d *1/00*

U.S. Cl. 14—1 **7 Claims**



Apparatus for the construction of bridges incorporating piers pivoted to a transverse structure which may be an integral part of a bridge span or a cross-beam on which a span is supported. The piers can pivot in a plane transverse to the bridge and are normally maintained at a predetermined angle to the transverse structure by hydraulic articulators connected to piers and transverse structure across the angle therebetween. The articulators incorporate a valve actuable when the articulators are subjected to a predetermined load to permit a change of length of the articulator and a consequent variation of the angle between piers and transverse structure and thus to relieve excessive stresses on the bridge structure.

3,750,211

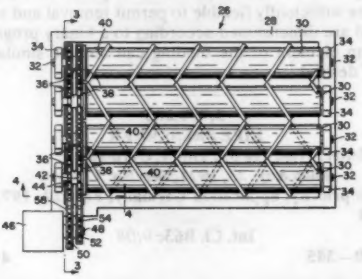
BEET-CLEANING AND CONVEYING APPARATUS

Richard David Zaun, and Howard Fred Clausen, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 16, 1971, Ser. No. 172,126

Int. Cl. A23n *13/00, 15/06*; B65g *33/06*

U.S. Cl. 15—3.11 **12 Claims**



A plurality of rollers are mounted on a frame in parallel relation to form troughs therebetween and the adjacent rollers are driven in opposite directions. A helical flighting is mounted on each of the rollers for rotation thereon and is driven in the same direction as its associated roller but at a slightly less angular velocity. The rotating rollers provide a scrubbing action on beets deposited thereon to remove dirt and other foreign substances from the beets and the helical flightings move the beets axially of the rollers to deposit the beets over one end of the rollers. By having the helical flighting rotate at a slightly less angular velocity than their associated rollers, they provide a cleaning action on the rollers to prevent any mud buildup on the rollers.

3,750,212

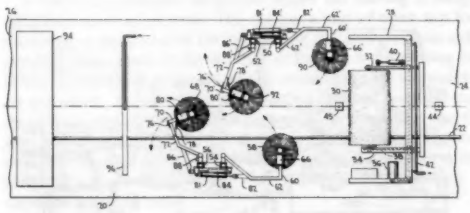
VEHICLE WASHING INSTALLATION

Robert P. Bernardi, and Donald A. Bernardi, both of Harrisburg, Pa., assignors to Bernardi Brothers, Inc., Harrisburg, Pa.

Filed July 14, 1970, Ser. No. 54,750

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 D **7 Claims**



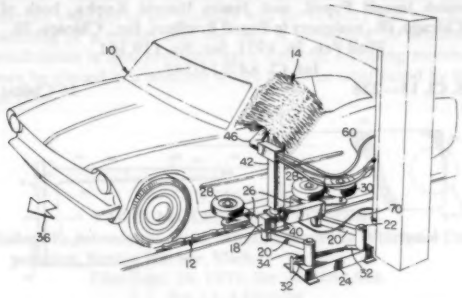
A vehicle washing installation including a pair of longitudinally staggered rear brushes and a pair of longitudinally staggered front brushes which are operative to wash the rear end and sides and the front end and sides of a vehicle, respectively, with each rear brush being responsive to the position of one of the front brushes such that the rear brushes contact the vehicle along the front doors thereof to avoid interference with antennas.

3,750,213

SIDE WINDOW BRUSH ARRANGEMENT FOR CAR WASHING INSTALLATIONS

Niels S. Hansen, Fort Wayne, Ind., assignor to Foundation and Bridge Corp., Fort Wayne, Ind.

Filed Aug. 13, 1971, Ser. No. 176,359
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **8 Claims**



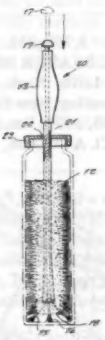
The invention discloses a brush arrangement for washing the side windows of vehicles passing through a car washing installation. Each side window brush is mounted on a bracket arrangement for adjustment toward and away from the path of the vehicle and vertically with reference to the vehicle and also so as to be inclinable to the vehicle. The brush is mounted on a carriage which is actuated by the vehicle moving through the installation to move the brush laterally of the vehicle path to position the brush in operative relation with the windows to be washed thereby. The brush is driven in rotation and is supplied internally with a washing medium. The carriage supporting the brush can also include a manifold for supplying washing medium to the lower body and wheels of the vehicle as it passes by the carriage.

3,750,214

BOTTLECLEANER

Hildegard Caliendo, and Patricia Puglia, both of 30-29 69th St., Woodside, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,960
Int. Cl. A46b *7/02*
U.S. Cl. 15—26 **5 Claims**



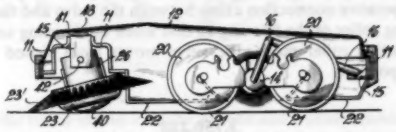
A brush for cleaning the inside of a narrow bottle, the brush in one form of the invention consisting of a tube with outwardly sideward extending brush bristle along one end thereof, the other end of the tube being enlarged to form a handle, and a rod inserted through the tube, one end of the rod having end-wise extending brush bristles and the other end having a hand controlable knob for pushing or pulling the rod so to selectively expose or retract the rod end bristles into the tube; the device in another form of the invention being screw fitted in a bottle cap so that the unit can rotate when it is moved longitudinally respective to the bottle.

3,750,215

SWEEPING APPARATUS

Johannes Liebscher, Nassau/Lahn, Germany, assignor to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany

Filed July 10, 1972, Ser. No. 270,488
Claims priority, application Germany, July 10, 1971, P 21 34 493.4
Int. Cl. A47l *11/33*; A47r *11/14*
U.S. Cl. 15—42 **14 Claims**



A housing has at least one compartment into which a rotatable brush deposits sweepings. The housing is mounted on wheels for movement in two mutually opposite directions and has at least one additional brush which is rotatable about an upright axis, being so mounted that the axis can tilt from vertical in dependence upon the direction in which the housing moves.

3,750,216

FOAM PRODUCING AND APPLYING DEVICE

Gunter Leifheit, Nassau/Lahn, Germany, assignor to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany

Filed Sept. 10, 1971, Ser. No. 179,295
Claims priority, application Germany, Sept. 12, 1970, P 20 45 175.6
Int. Cl. A47l *11/34*
U.S. Cl. 15—50 C **11 Claims**

A housing is to be moved over a surface to which foam is to be applied; a reservoir means for a foamable substance is in the housing and a trough-shaped distributor is arranged to receive foamable substance from the reservoir. A foaming arrangement is provided including at least one foaming element mounted for rotary movement and extending in part into the distributor to pick up foamable substance therein and for subsequently converting it into foam.

3,750,217

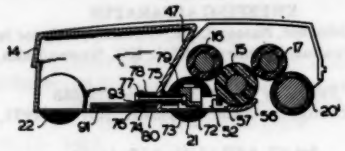
APPARATUS FOR TREATING FLOOR AND OTHER SURFACES

Johannes Liebscher, Nassau/Lahn, Germany, assignor to Firma Leifheit International Gunter Leifheit K.G., am Eimelturm, Germany

Filed Nov. 26, 1971, Ser. No. 202,518
Claims priority, application Germany, Aug. 24, 1971, P 21 42 243.5
Int. Cl. A47l *11/03*
U.S. Cl. 15—50 C **12 Claims**

A housing is movable over a surface to be treated and has a roller or the like which moves relative to the housing during

such displacement. A reservoir for treating liquid is connected with a foam-plastic roller on which liquid received from the reservoir is converted into foam by squeezing alternate increments of the roller and releasing them. A valve is mounted in the passage connecting the reservoir and the roller and is displaceable between a normally closed and an open position with biasing spring biasing it to its normally closed position. An operative connection exists between the valve and the supporting roller of the housing so that when the housing and the supporting roller move, the valve moves from closed to its open position.

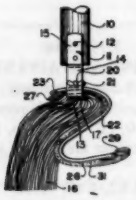


3,750,218

COMBINATION OF A YACHT MOP AND SCRUBBING PAD

Bruno Rosocha, 124 Vryenhoek Crescent, Winnipeg, Manitoba, Canada

Filed June 21, 1971, Ser. No. 155,204
Int. Cl. A47l *13/12*
U.S. Cl. 15—118 **1 Claim**



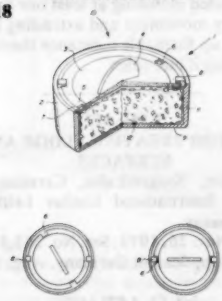
An arcuately curved S-shaped plate is clamped to the cross bar of a yacht mop and has a synthetic fiber pad extending from the clamp around the lower curved portion to be engaged through a slot in the plate so that it is clamped between the plate and the body of the pad. It can be used for scrubbing action on areas which cannot be cleaned by the yacht mop alone.

3,750,219

PORTABLE GOLF BALL CLEANING DEVICE

John R. MacConnell, 29 Lyellwood Pky., Rochester, N.Y.

Filed Jan. 28, 1972, Ser. No. 221,616
Int. Cl. A63b *57/00*
U.S. Cl. 15—118 **10 Claims**



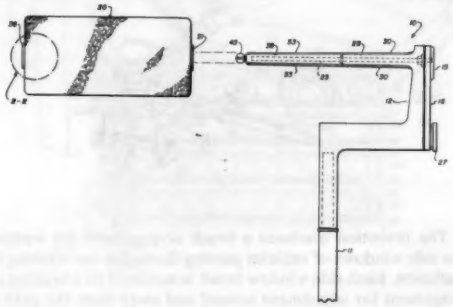
An improved portable golf ball cleaning device is described. The device comprises a canister, a cover and a cleansing material situated within the canister. When the cover is seated in place, the cover and canister are designed to provide a liquid and vapor tight seal thereby preventing loss of cleaning liquid from within the canister. The device is designed to conveniently fit within the pocket of the user.

3,750,220

MOP HEAD FOR A WRINGER TYPE MOP HOLDER

Samuel Joseph Popeil, and James Harold Kupka, both of Chicago, Ill., assignors to Popeil Brothers, Inc., Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,161
Int. Cl. A47l *13/142*
U.S. Cl. 15—228 **16 Claims**



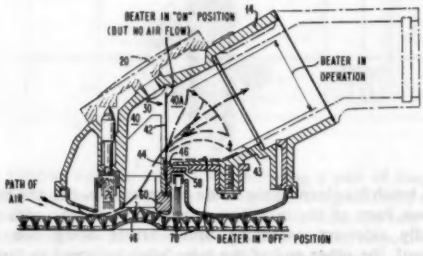
A mop head which is adapted to be removably secured to a cantilever wringer mop in which a sponge block is encased in a cloth. The cloth is tucked in to co-acting spool and ring assemblies at both ends of the long axis of the block which secure the loose ends of the fabric interiorly of the block. Co-acting collars and teeth are placed respectively on the rings and spools to secure the cloth in place. In the method of manufacture the larger interior bored spool is first assembled with its co-acting ring. Thereafter the cloth sleeve is slipped over the sponge block, the sponge block having first been compressed across its weak axis, at least at the long corner edges, to provide room to loose-fittingly be received within the tubular fabric. Then a mandrel is passed through the already affixed spool and ring and extends upwardly to engage the lower portion of the ring at the opposite end. Thereafter the fabric is tucked within the ring thus engaged by the mandrel, and the last spool jam-fittingly pressed in place to thus securely lock the fabric interiorly of the ring and complete the construction of the mop head.

3,750,221

SONIC BEATER NOZZLE

Carl E. Meyerhoefer, Little Neck, N.Y., assignor to The General Signal Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,064
Int. Cl. A47l *9/06, 11/40*
U.S. Cl. 15—404 **7 Claims**



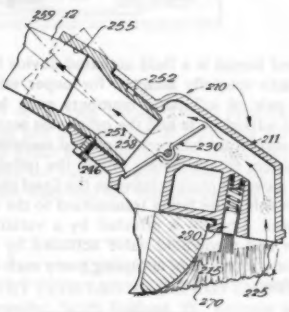
A vacuum cleaner suction nozzle which features a sonic beater, that is, a beating mechanism that relies on the pulsa-

tions in air flow produced by a vibratory member for directly achieving the requisite cleaning action. The beating mechanism dispenses with the use of a vibrating or agitating device in direct physical contact with the carpet surface. The vibrating member of the bearing mechanism is located near the discharge end of the suction nozzle such that is does not interfere with the removal of bulky objects as these are encountered in the cleaning operation. Moreover, the vibrating member, because of its whip-like movement, produces such marked changes in air pressure and air velocity that efficient cleaning of a carpet and the like is promoted. A disabling mechanism is also provided such that the vibrating member may be placed in a position where it will be unaffected by the air flow.

3,750,222
VACUUM CLEANER STRUCTURE

Robert E. Johnson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 28, 1971, Ser. No. 184,526
Int. Cl. A47l 9/06
U.S. Cl. 15—416 **12 Claims**



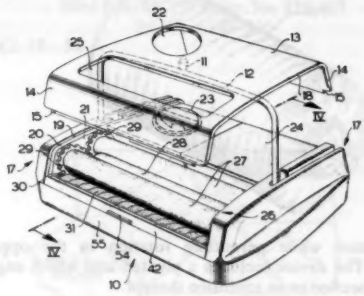
A vacuum cleaner structure for use with a canister-type vacuum cleaner having a tubular wand provided at one end with a nozzle. The nozzle is provided with a pair of suction inlets including a lowermost inlet and an upper inlet. Means are provided for controlling the air flow through the inlets so that air may be drawn selectively through either of the inlets. In one form, the structure includes a yoke connector adapted to vary the disposition of the upper inlet relative to the lower inlet for adjusting the nozzle for different height rug pile. The nozzle further is arranged to carry a brush adjacent the upper inlet for brushing the upper end of the rug pile during the vacuuming operation.

3,750,223
CLEANING APPARATUS

Gunter Leifheit, Nassau/Lahn, Germany, assignor to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany

Filed Jan. 18, 1972, Ser. No. 218,809
Claims priority, application Germany, Jan. 19, 1971, P 21 02 325.6
Int. Cl. A47l 11/03
U.S. Cl. 15—50 C **19 Claims**

A frame of a cleaning apparatus accommodates a unit which comprises a reservoir for a foamable liquid and a distributor trough unitary with the reservoir and adapted to receive foamable liquid therefrom. Mounting portions are provided for removably mounting the unit in the frame. A foaming unit is provided which converts the liquid received in the distributor trough into foam. Brush rollers are provided on the frame so that the latter can roll on these rollers over a surface to be treated with the foam, and the brush rollers turn

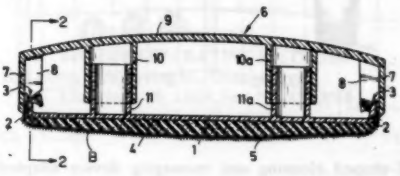


when the frame moves over the surface and transmit motion to the foaming unit which causes the same to foam the liquid in the distributor trough.

3,750,224
TEXTILE BRUSH

Kurt R. Krusche, Frankfurt, Germany, assignor to Allstar Verbrauchsqueter GmbH & Co., KG, Frankfurt, Germany

Filed Sept. 27, 1971, Ser. No. 183,943
Claims priority, application Germany, Jan. 10, 1973, G 70 39 751.2
Int. Cl. A46b 3/08, 9/02
U.S. Cl. 15—171 **7 Claims**



A textile brush comprising a base plate having a surface supporting a shallow flexible brush insert, the base plate having an elevated rim extending away from the said surface, the rim being formed with upstanding teeth over which a marginal region of the brush insert is folded, a cover part being provided which has ribs projecting from the inside of its side walls, and the ribs being staggered relative to the said teeth, the ribs engaging in the gaps between the teeth and serving to press the folded over marginal region of the brush insert against the said rim, the side walls of the cover part being telescoped over the rim and serving to press the brush insert from the outside against the said rim.

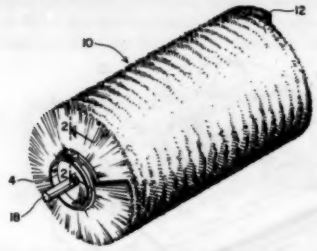
3,750,225
STREET SWEEPING BRUSH

William Gould, and Charna Gould, both of 93 Sagamore Rd., Millburn, N.J.

Filed Dec. 4, 1970, Ser. No. 95,200
Int. Cl. A46b 7/10
U.S. Cl. 15—182 **17 Claims**

A rotary helical brush for sweeping or cleaning has a cylindrical core with a continuous fabricated helical coil bristle section encircling the core, and a device attached to an edge

of the core and coupled to an end of the bristle section for preventing rotation of the bristle section in one direction dur-

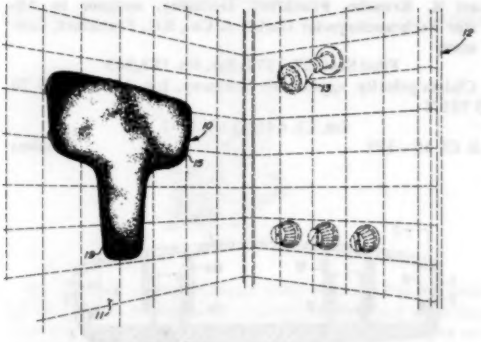


ing operation while permitting rotation in the opposite direction. The device includes a pivoted arm which engages the bristle section or an extension thereof.

3,750,226
REPOSITIONABLE T-SHAPED BACK CLEANING DEVICE

Robert W. Morgan, 5601 E. Naun Valley Dr., Scottsdale, Ariz.

Filed Nov. 4, 1971, Ser. No. 195,575
Int. Cl. A47k *7/02*
U.S. Cl. 15—187 **4 Claims**

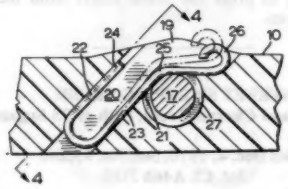


A T-shaped cleaning and massaging device adapted for mounting on the walls of a shower stall for cleaning and massaging a particular part of the user's back and quickly repositionable for cleaning and massaging another part of his back.

3,750,227
WINDSHIELD WIPER CLIP ASSEMBLIES

George Hayhurst, 4180 Willowdown Rd., Oakville, Ontario, and Eric Moran, 2173 Mount Forest Dr., Burlington, Ontario, both of Canada

Filed Oct. 26, 1971, Ser. No. 192,428
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **7 Claims**

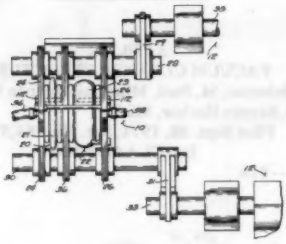


A windshield wiper clip assembly especially suited for side arm windshield wipers employs a U-shaped wire retaining member accommodated in a slot in the wiper body, one arm of the retaining member being corrugated and provided with a transverse pointed end to retain it in the slot, while the other end is curved to engage a retaining slot in a wiper arm pivot pin inserted in a bore in the wiper body.

3,750,228
OSCILLATING DOCTOR-BLADE MECHANISM

Herbert D. Wake, Green Bay, Wis., assignor to Essco, Inc., Green Bay, Wis.

Continuation-in-part of Ser. No. 779,566, Nov. 27, 1968. This application June 18, 1970, Ser. No. 47,275
Int. Cl. D21g *3/00*
U.S. Cl. 15—256.53 **9 Claims**

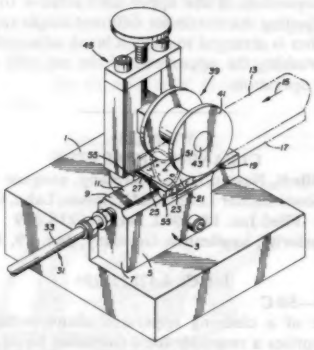


Disclosed herein is a fluid actuated device for oscillating a doctor blade specially adapted for paper mills, said device having a pair of inflatable members each having one side secured to a fixed plate and the other side secured to a movable plate supported between the fixed members and a water control system to alternately inflate the inflated members to move the movable plate relative to the fixed plates, the motion of the movable plate being transmitted to the doctor blade to be oscillated. Control is effected by a variable exhaust line restriction and a solenoid valve actuated by a remote pulse forming timer capable of actuating many such devices without modification.

3,750,229
APPARATUS FOR CLEANING CURED SPONGE RUBBER EXTRUSION

Paul L. Rossomme, Logansport, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio

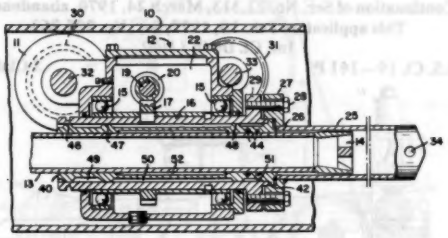
Filed Mar. 29, 1971, Ser. No. 129,024
Int. Cl. A47l *5/38*
U.S. Cl. 15—304 **8 Claims**



This invention concerns a method and apparatus for cleaning cured sponge rubber extrusions of varying cross sections and geometry especially having undercuts therein while not

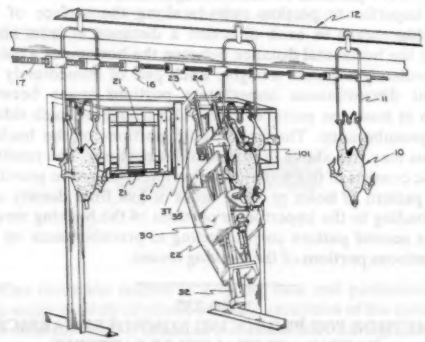
upsetting the normal shrink characteristics of the extrusion. The method is practiced by opening the undercut under near frictionless conditions and passing the exposed surface thereof over a low friction, air lubricated surface so that the lubricating air film impinges the surface to remove the adhered particles.

3,750,230
SOOT BLOWER
James N. Reed, Fairview, Pa., assignor to Copes-Vulcan, Incorporated, Lake City, Pa.
Filed Apr. 7, 1972, Ser. No. 242,080
Int. Cl. A47l 5/38
U.S. Cl. 15—317 **6 Claims**



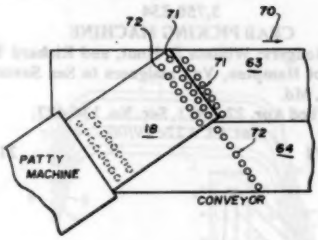
A soot blower of the type having a lance tube carried by a traveling carriage and a feed tube for supplying hot steam to the lance tube in which an insulating liner is provided between the feed tube and the carriage and a piston ring seal is provided between the liner and the feed tube at the front end of the carriage.

3,750,231
POULTRY PROCESSING IMPROVEMENT
Thomas R. Schreuder, South Holland, Ill., assignor to Swift & Company, Chicago, Ill.
Filed Oct. 12, 1971, Ser. No. 188,304
Int. Cl. A22b 3/08
U.S. Cl. 17—11 **12 Claims**



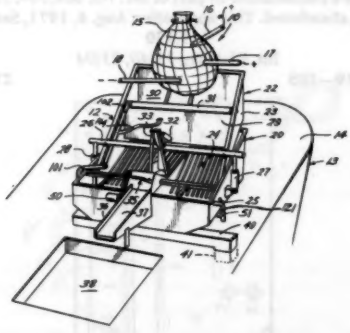
A method and apparatus for automatically cutting the neck and clearing the body cavity of a partially eviscerated poultry carcass wherein the positions of the stern and neck of of the carcass are detected and engaged against displacement and thereafter the neck is cut and a vacuum nozzle is reciprocated within the body cavity.

3,750,232
MOLDING APPARATUS
Harry H. Holly, Olympia Fields, Ill., assignor to Hollymatic Corporation, Olympia Fields, Ill.
Filed Feb. 25, 1972, Ser. No. 229,407
Int. Cl. A22c 7/00
U.S. Cl. 17—32 **7 Claims**



A molding apparatus particularly for forming articles of moldable food material such as patties from ground meat, fish and the like in which a mold device having a plurality of mold openings for forming a plurality of the articles is moved between charging and discharging stations for these openings and there is provided at the discharging station one or a plurality of separate transporting means such as one or more endless conveyors for conveying the articles to one or a plurality of of separate destinations. One specific example of this is to have two sets of mold openings each for shaping patties and a pair of endless conveyors on which articles from the openings are deposited with one conveyor transporting the patties to one destination such as a fast freezer while the other conveyor transports its patties to a separate destination such as a cooker-canner. The width of coverage of the patties on the conveyor or conveyors is determined by the angular arrangement of the mold relative to the conveyor or conveyors.

3,750,233
SHRIMP SEPARATING METHODS
Jack R. Lovett, 1900 Irving St., Orange, Tex.
Filed June 19, 1969, Ser. No. 834,652
Int. Cl. A22c 29/00
U.S. Cl. 17—45 **7 Claims**



After a net load of shrimp and fish is pulled aboard a shrimp boat the intermingled shrimp and fish are subjected to an electric shock for purposes of electrocuting same. The catch is then dumped into a flotation tank forming part of a sorting machine located on the shrimp boat. The lower portion of the flotation tank is filled with water and the shocked shrimp sink to the bottom of the tank, while the shocked fish float to the surface of the water therein. In sinking to the bottom, the shrimp fall through an inclined screening tray and onto a con-

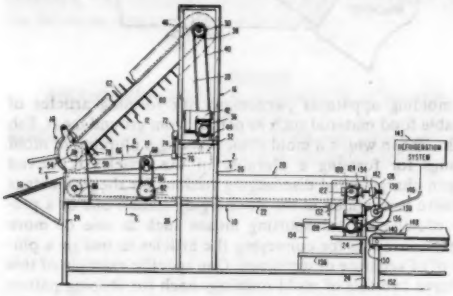
veyor which removes them from the tank. After the shrimp have had time to settle to the bottom, the lower portion of the screening tray is elevated for purposes of dumping the larger fish onto a conveyor which carries them to a fish meal machine. A continuous flow of water is supplied to the tank and this serves to flow the smaller fish out of an outlet at the rear of the tank, from whence they are dumped back into the sea or into the fish meal machine.

3,750,234

CRAB PICKING MACHINE

Nellie Hunt Rodgers; William P. Hunt, and Richard T. Wenstrom, all of Hampton, Va., assignors to Sea Savory, Inc., Cambridge, Md.

Filed Apr. 22, 1971, Ser. No. 136,427
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 **21 Claims**



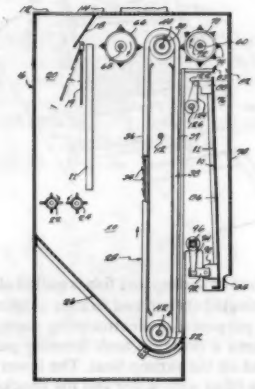
An endless, cleated conveyor belt inclined upwardly elevates cooked crabs for free fall at the discharge end of the belt onto the rear of a perforated shaker screen. The direct fall impact breaks up the crabs allowing small meat particles and waste to fall through the shaker screen onto a second endless conveyor belt for sorting. The larger crab particles are recirculated to the elevator conveyor belt for multiple cycle, free fall impact onto the perforated shaker screen.

3,750,235

TEXTILE PROCESSING EQUIPMENT

Cecil S. Wise, Dallas, N.C., assignor to Fiber Controls Corporation, Gastonia, N.C.

Continuation of Ser. No. 745,066, June 13, 1968, abandoned, which is a continuation-in-part of Ser. No. 608,904, Jan. 12, 1967, abandoned. This application Aug. 4, 1971, Ser. No. 169,120
Int. Cl. D01g *15/40, 23/04*
U.S. Cl. 19—105 **27 Claims**



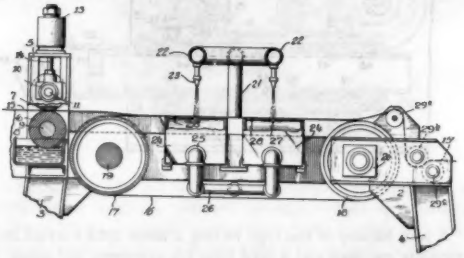
An improved web former for feeding a fiber web of uniform density and thickness to subsequent processing equipment. Also disclosed is the combination of the web former with various types of subsequent textile processing equipment, and a method of operating the web former alone, as well as in conjunction with the subsequent processing equipment. A feature in the construction and operation of the web former resides in the realization that a fiber web of improved density and thickness uniformity is obtainable if the air within the shaft in the former is removed or pressed out through perforations in one of the sides of the shaft while the shaker plate, which forms one side of the shaft, is oscillating.

3,750,236

METHOD AND APPARATUS (DISCONTINUOUS IMPERFORATE PORTIONS ON BACKING MEANS OF OPEN SANDWICH)

Frank Kalwaites, Gladstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 22,313, March 24, 1970, abandoned. This application Feb. 10, 1972, Ser. No. 225,263
Int. Cl. D04h *11/00*
U.S. Cl. 19—161 P **3 Claims**



A method and apparatus for producing, from a layer of fibrous material such as a fibrous web, nonwoven fabrics that contain apertures or holes, or other areas of low fiber density, and have a plurality of patterns that alternate and extend throughout the fabric. One form of the method includes the steps of supporting the starting web upon a backing means that is foraminous except for a discontinuous pattern of imperforate portions and has protuberances and troughs alternating across its foraminous portions, then directing fluid rearranging forces substantially uniformly and continuously across the surface of the web, causing some of the fluid streams to strike the imperforate portions of the backing means, and others to strike the protuberances on the backing means, to deflect the same, all of the fluid streams ultimately passing through the foraminous portions of the backing means. Each discontinuous imperforate portion extends along the surface of the backing means in each direction a distance at least about twice the horizontal distance between the bottoms of a pair of immediately adjacent troughs. Each pair of immediately adjacent discontinuous imperforate portions spans between them at least one protuberance and a trough on each side of the protuberance. The imperforate portions of the backing means may rise above the foraminous portions. The resulting fabric consists of fibers that have been rearranged to provide a first pattern of holes or other areas of low fiber density corresponding to the imperforate portions of the backing means, and a second pattern corresponding to protuberances on the foraminous portions of the backing means.

3,750,237

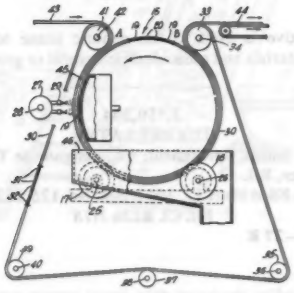
METHOD FOR PRODUCING NONWOVEN FABRICS HAVING A PLURALITY OF PATTERNS

Frank Kalwaites, Gladstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 22,304, March 24, 1970, abandoned. This application Feb. 10, 1972, Ser. No. 225,266
Int. Cl. D04h *11/00*
U.S. Cl. 19—161 P **2 Claims**

A method for producing, from a layer of fibrous material such as a fibrous web, nonwoven fabrics that have a plurality

of patterns of groups of fiber segments that alternate and extend throughout the fabric. One form of the method includes the steps of positioning the starting web between an apertured forming means and a backing means that has continuous raised imperforate portions that lie between and interconnect discontinuous foraminous portions, then directing fluid rearranging forces through the apertures of the forming means against the fibers of the starting web, causing some of the fluid streams to strike the continuous raised imperforate portions of the backing means and all of the fluid streams ultimately to pass through the foraminous portions of the backing means. Each of the discontinuous foraminous portions has an area at



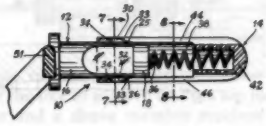
least about three times, and for improved results four or more times, the area of an aperture of the apertured forming means. The imperforate portions of the backing means are one to two times as wide at their narrowest parts as a forming aperture at its narrowest part. Fiber segments are moved and positioned to form a first pattern of mats of randomly oriented fiber segments arranged in accordance with the pattern of the discontinuous formaminous portions of the backing means, and a second pattern of yarn-like bundles of fiber segments that corresponds to the configuration of the continuous imperforate portions of the backing means and interconnects the portions of the fabric in the first pattern.

3,750,238

PLASTIC SPRING LOCK

Robert G. Tanner, St. Charles, Mo., assignor to Arundale Manufacturers, Inc., St. Louis, Mo.

Filed Dec. 28, 1971, Ser. No. 212,968
Int. Cl. A44b *21/00*; A47g *29/02*
U.S. Cl. 24—1.81 **8 Claims**



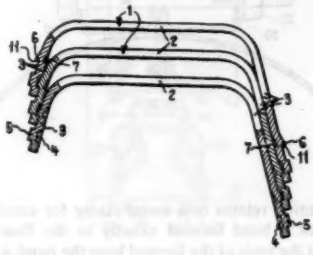
This invention relates to a spring lock and particularly to one made entirely of plastic with the exception of the spring itself wherein there is included a stud member having means at one end to provide a seat for the spring and tapered protrusions on its side. A plastic thimble-type sleeve fits over the stud and has elongated slots in which the protrusions slide and means at its closed end for providing a seat for the spring. The stud has recesses which allow distortion of the open end of the sleeve as it is forced over the tapered protrusion for assembling the lock. The spring is mounted between the closed end of the sleeve and the stud to bias the sleeve away from the stud.

3,750,239

SEAL FOR CLOSING ENDS OF STRIPS OR RIBBONS

Rudolf Styner, Frauenkappelen, Switzerland, assignor to Strapex AG, Aargau, Switzerland

Filed Dec. 9, 1971, Ser. No. 206,267
Claims priority, application Switzerland, Dec. 10, 1970, 18306/70
Int. Cl. B63d *63/06*
U.S. Cl. 24—23 W **5 Claims**



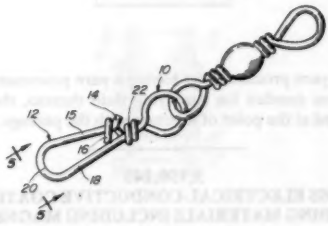
A clamp for securing together the end portions of a ribbon or strip, usually metal, bound around containers such as crates, packing cases and the like, comprises a strip, bar or plate, usually metal, of U-shaped configuration having a flat bight portion and angularly disposed arms enabling the stacking of the clamps by straddling-nesting relationship to each other for shipment and storage. The arms of the clamps are provided with latch means for releasably securing the clamps in stacked relation and the latch means comprises projections or protrusions on the outer sides of the arms for nesting in recesses or openings in the inner sides of the arms of adjacent clamps within which they are nested.

3,750,240

SNAP FOR FISHING TACKLE

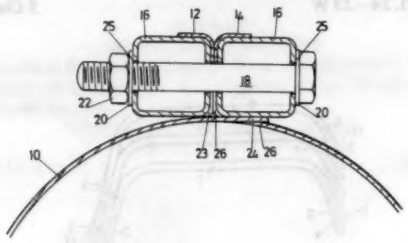
Leslie R. Fridrich, 1531 S. 60th Ct., Cicero, Ill.

Filed Jan. 5, 1972, Ser. No. 215,496
Int. Cl. A44b *13/02*
U.S. Cl. 24—237 **1 Claim**



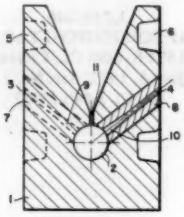
A snap formed from a single piece of resilient wire wherein one end is bent to form an eye and then double looped over the main shank and terminating in a catch, the terminal end being bent in a direction forwardly, sidewardly and downwardly of the double loops. The other end of the wire is bent back upon the shank to form an elongated spring loop and terminating in an upstanding hook arranged to cooperatively removably engage the catch. The loop is positioned above and along the shank. The snap normally is secured to a fish hook or lure and is designed for fast opening and closing.

3,750,241
PIPE CLAMPS
Hendrik Johannes Bootha, 6 Judith St., Thabazimbi, Transvaal, Republic of South Africa
Filed Oct. 29, 1971, Ser. No. 193,844
Int. Cl. B65d *63/02*
U.S. Cl. 24—279 **2 Claims**



The invention relates to a metal clamp for circular tubing composed of a band formed exactly to the final diameter required. At the ends of the formed loop the band is formed to provide flanges and at one end a tongue that penetrates a slot in the opposed flange. The flanges are drawn together by means of a bolt passing through box sections butressing each flange.

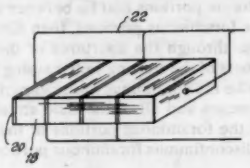
3,750,242
YARN COMPACTING APPARATUS
Neil E. Lloyd; Archibald A. Owen, both of Rock Hill, S.C., and David C. Brenner, Shelby, N.C., assignors to Celanese Corporation, New York, N.Y.
Filed June 30, 1971, Ser. No. 158,326
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **10 Claims**



A fluid yarn processing jet having a yarn processing passage at least one conduit for supplying fluid thereto, the conduit being flared at the point of juncture with the passage.

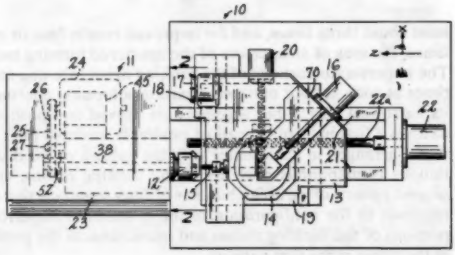
3,750,243
LOW LOSS ELECTRICAL CONDUCTIVE COATING AND BONDING MATERIALS INCLUDING MAGNETIC PARTICLES FOR MIXING
Winslow W. Prentice, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 16, 1968, Ser. No. 783,976
Int. Cl. B01j *17/00*
U.S. Cl. 29—25.35 **1 Claim**

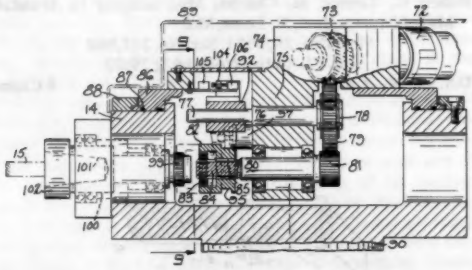
A conductive coating and bonding material for single element electrostrictive transducers and for those formed as a mosaic stack, or non-linear seriatim assembly of electrostrictive segments and including a matrix of known types of room temperature curing epoxy resin having uniformly dispersed therethrough, copper and silver flakes and nickel powder, the nickel powder being present for magnetic mixing. The term



electrostrictive is used to the generic sense to encompass ceramic materials and piezoelectric natural or grown crystals.

3,750,244
TURRET LATHE
William R. Smith, Springfield, Vt., assignor to Textron, Inc., Providence, R.I.
Filed Mar. 17, 1971, Ser. No. 125,162
Int. Cl. B23b *3/18*
U.S. Cl. 29—27 R **8 Claims**



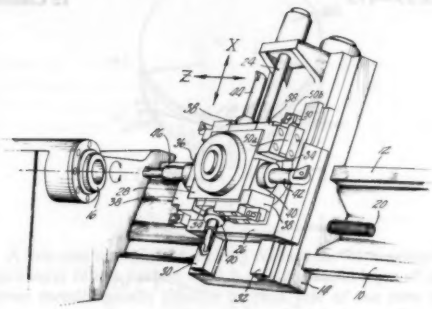


This disclosure relates to a turret lathe having full production capabilities. A turret carrying a plurality of drivable end working tools is selectively indexable and a single drive means is arranged to be coupled to and uncoupled from each drivable tool when indexed to an operative position. The spindle is arranged to be driven at turning speeds for operation with turning tools, and also at feed speeds in conjunction with the end working tools so that irregular contours, slots, indentions, etc. may be machined in the end face and also the peripheries of a workpiece. The end working tools may also perform drilling, boring and tapping operations on the workpiece as it is indexed to position.

3,750,245
TURRET LATHE

Edwin K. Kennedy, West Hartford, and Richard I. Latzko, Glastonbury, both of Conn., assignors to Pratt & Whitney, Inc., West Hartford, Conn.

Filed Sept. 21, 1971, Ser. No. 182,388
Int. Cl. B23b *3/18*
U.S. Cl. 29—39 3 Claims

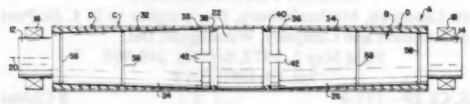


A lathe has a square turret with two tools orthogonally arranged on each turret face such that one tool is mounted in perpendicular relationship to the turret face, and the other tool is mounted in parallel relationship to the turret face. The turret is rotatable to four index positions and is movable along two axes. The tools, which are mounted perpendicular to the respective turret faces, are adapted to perform boring operations on a workpiece, and the tools, which are mounted in parallel relationship to the respective turret faces are adapted for turning and/or facing operations. When utilizing the four index positions of the turret, eight tool positions are possible.

3,750,246
COMPOSITE ROLL

David W. Pessen, Haifa, Israel, assignor to Gulf & Western Systems Company, New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 179,963
Int. Cl. B21b *31/08*
U.S. Cl. 29—130 17 Claims

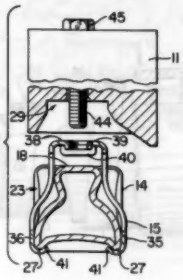


A composite roll for controlled deflection in calendering operations or the like to achieve an even nip includes an inner core member and a sleeve member received over the core member. At the central portion of the roll, both the core member and the sleeve are substantially cylindrical and tightly fitting together. On opposite sides of the central portion of the roll, either the outer peripheral surface of the core member, or the inner peripheral surface of the sleeve member, diverges from the other peripheral surface to form a space which varies in cross-sectional area proceeding from the central portion toward the opposite end portions of the roll. These annular spaces are filled with elastomeric material to achieve a substantially uniform spring rate along the entire length of the composite roll. The tightly fitting peripheral surfaces at the central portion of the roll maintain concentricity of the outer shell and prevent it from taking on a permanent eccentricity with respect to the core member.

3,750,247
METHOD OF MOUNTING A CONTROL DEVICE TO A FUEL SUPPLY MANIFOLD

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 817,001, April 17, 1969, Pat. No. 3,602,480. This application Nov. 18, 1970, Ser. No. 90,821
Int. Cl. B21d *53/00*
U.S. Cl. 29—157 R 10 Claims

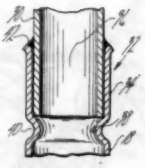


A fuel supply manifold having side wall means provided with an opening means therethrough and a control device sealingly disposed against the side wall means of the manifold around the opening means and having an inlet means disposed in fluid communication with the opening means, the control device being sealingly secured to the manifold solely by a bracket means that is detachably interconnected to the manifold about the side wall means thereof and to the control device in such a manner to secure the control device to the manifold in sealed relation solely by the interconnection of the bracket means with the control device and the manifold.

3,750,248
METHOD FOR MAKING EVAPORATOR OR CONDENSER CONSTRUCTION

Herbert R. Morris, Morrisville, Pa., assignor to Emhart Corporation, Bloomfield, Conn.

Continuation of Ser. No. 737,080, June 14, 1968, abandoned. This application Aug. 12, 1971, Ser. No. 171,297
Int. Cl. B21d *53/00*
U.S. Cl. 29—157.3 R 9 Claims

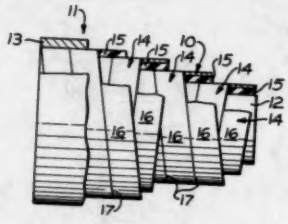


The method of making a refrigeration evaporator or condenser construction wherein the ends of preferably aluminum tubes which have been extended through heat exchange plates or fins in a refrigeration evaporator or condenser construction are joined with U-bend connectors, said method comprising forming radial internal beads near the ends of the tubes to be connected to provide stops for the ends of the U-bend connectors which are of lesser diameter, flaring the very end portions of the tubes to be connected, laying a thermo-fluid welding material around the connector end portions within the flared ends of the tubes to be connected, and applying heat to flow the said material prior to chilling.

3,750,249
METHOD OF MANUFACTURE OF HELICALLY WOUND LAMINATED BEARINGS

William D. Brandon, and Jack A. Drais, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 77,819, Oct. 5, 1970, Pat. No. 3,690,639.
This application May 8, 1972, Ser. No. 251,423
Int. Cl. B21d *53/10*; B23p *11/00*
U.S. Cl. 29—149.5 NM 7 Claims

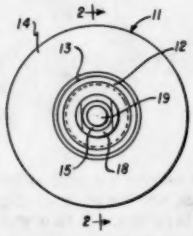


An improved cylindrical bearing material of a laminated construction can be made by employing a plurality of alternating cylindrical shells of elastomer and metal laminated together in which each metal shell is formed by helically winding a band of the metal in an edge-wise, abutting relationship to form a cylindrical metal shell or sleeve. the resulting bearing material, composed of a plurality of alternating concentric elastomeric and metallic shells can be confined between a cylindrical core and an outer cylindrical retaining ring to form a bearing assembly in which the bearing material may be placed under a radial pre-load, if desired, to decrease its radial deflection when it is placed under radial loads. In the preferred embodiment of the invention, the adjacent metal shells are wound in opposite directions to stabilize the bearing material under torsional loading.

3,750,250
PRINTER'S ROLLER AND METHOD OF MAKING SAME

James K. Brown, Arlington Hgts., Ill., assignor to Samuel Bingham Company, Franklin Park, Ill.

Filed Aug. 31, 1972, Ser. No. 285,227
Int. Cl. B23p *11/00*; B21h *1/14*
U.S. Cl. 29—148.4 D 10 Claims

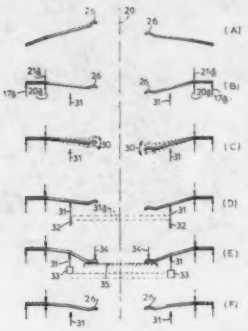


Lightweight printer's roller having sleeve of either rubber extruded onto long aluminium tube or elastomer, such as urethane, cast onto tube, cut to desired length, broached at ends to form keyways for receiving keys on journals injection molded of suitable plastic, with journals secured in tube by press fit or with adhesive, and thereafter trued, and outer surface of roller finished by grinding and end trimming.

3,750,251
METHOD AND APPARATUS FOR SETTING A DIAPHRAGM SPRING

Algernon Walter Pugh, and Charles Alan Morewood, both of Sheffield, England, assignors to GKN Transmissions Limited, Warwick, England

Filed June 20, 1972, Ser. No. 264,620
Claims priority, application Great Britain, May 21, 1971, 29,801/71
Int. Cl. B23q *17/00*
U.S. Cl. 29—173 15 Claims

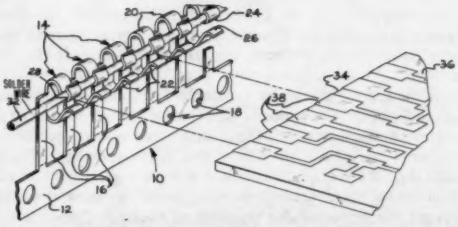


A method of bringing the inner ends of the fingers of a clutch diaphragm spring into coplanar relation comprising the steps of elastically straining the spring in an outer annular zone to convert it from domed or frusto-conical form into more flattened form, and while it is in this condition bending the inner ends of the fingers to an amount which exceeds the elastic limit of the spring material, the bending taking place about fulcrum elements, the spring pressed into contact with respective fingers and then locked. An apparatus for carrying out the method includes an angularly spaced series of clamping devices for clamping a diaphragm spring within a dished clutch cover member to deform this elastically between the cover member and a pressure plate in an outer zone of the spring, and an axially movable deforming element engaging the inner ends of the fingers while these are supported by spring loaded fulcrum elements locked by roller and wedge mechanisms in the positions in which they first contact the fingers.

3,750,252
SOLDER TERMINAL STRIP

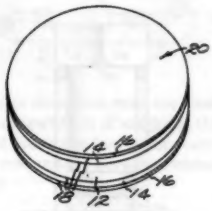
Dirk Landman, Mechanicsburg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1972, Ser. No. 249,305
Int. Cl. H01b *5/14*
U.S. Cl. 29—191.6 8 Claims



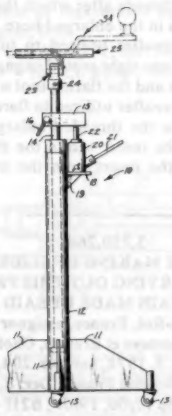
A terminal strip having a number of closely spaced solder terminals with a continuous solder wire extending along the strip and secured to each terminal. The terminals are brought into physical engagement with spaced contacts and heated to melt the solder wire. The solder melts and coalesces on the individual contacts to form independent soldered connections.

3,750,253
COINAGE MATERIAL
Edwin A. Miller, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 29, 1971, Ser. No. 193,852
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.3 6 Claims



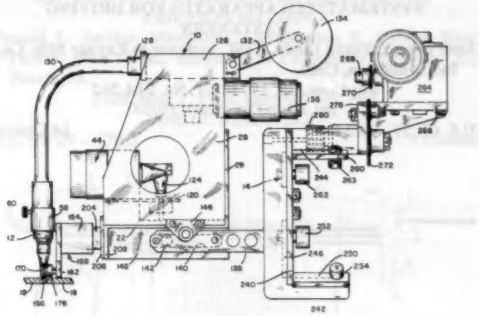
A low-cost material for making coins is shown to comprise a core layer of low carbon steel, a relatively thin layer of nickel silver metallurgically bonded to each side of the core layer, and a relatively very thin layer of nickel matallurgically bonded to the outer surface of each of the layers of nickel silver material. These materials cooperate to provide a composite coinage material having desirable coinage properties including pleasing surface color, good ring, excellent mintability, good corrosion-resistance and low-cost. The layers of relatively low-cost nickel silver, being of comparable color to nickel, permit use of very thin outer layers of the more expensive nickel without risk of exposing the steel core material on the minted surfaces of coins after coinage wear. In addition, the nickel silver galvanically protects the edge of the steel core layer to reduce the occurrence of rust staining at the edges of the coins.

3,750,254
TRAILER HITCH INSTALLATION APPARATUS
Larry Lee Krajcik, 8921 W. Rohr Ave., Milwaukee, Wis.
Filed May 3, 1971, Ser. No. 139,621
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P 3 Claims



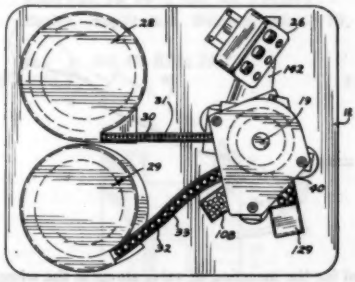
A device for installing trailer hitches. This device includes a telescoping sleeve combination mounted on legs with casters and the upper extremity includes a table with an adjustable bar, the table being elevated by hydraulic jack means.

3,750,255
MEANS FOR CLAMPING PIPE SECTIONS
Richard Carl Stanley, Tulsa, Okla., assignor to Midwestern Specialties, Ltd., Tulsa, Okla.
Division of Ser. No. 778,416, Nov. 25, 1968, Pat. No. 3,681,560. This application Aug. 2, 1971, Ser. No. 168,187
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B 7 Claims



An internal clamping apparatus simultaneously engages the inner periphery of adjacent pipe ends in such a manner as to apply radially outward pressure thereto for reforming the ends into substantially identical circular configurations, regardless of any existing deformation in the pipe. The two reformed pipe ends are securely retained in an abutting position by the clamping means during an entire girth welding operation or the like at the pipe joint. Subsequent to the welding of the pipe joint, the internal clamping apparatus may be moved longitudinally along the pipe line to the position of the next pipe joint to be welded, and the entire operation may be repeated.

3,750,256
CONTINUOUS MOTION TWO PART ASSEMBLY MACHINE
James W. Elmer, Osseo, Minn., assignor to Inventors Engineering Inc., Minneapolis, Minn.
Filed Nov. 29, 1971, Ser. No. 202,969
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B 19 Claims



A continuous motion two part assembly machine comprising a rotatable turntable adapted to pick up parts to be assembled at provided locations at the periphery and which turntable carries the parts in a continuous motion. Plunger actuators are mounted for movement with said turntable, and can be operated by a stationary cam to first determine the presence and proper configuration of a first of said parts, rejecting a first of said parts not of proper configuration, removing a second of said parts carried thereby in the absence of the corresponding first part, assembling properly configured first parts with second parts, counting the assemblies made, and

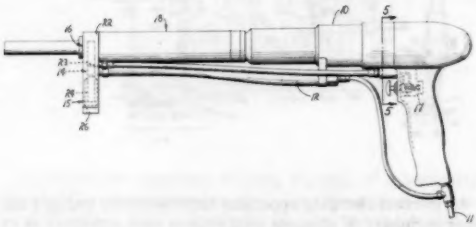
subsequently removing the assembled parts from the unit. In addition, if a second part is missing, the first parts are sorted from the assembled parts after removal from the turntable. The unit comprises a continuous motion pick up, inspection, assembly and removal of parts utilizing cam operated working elements or plungers.

3,750,257

SYSTEMATIZED APPARATUS FOR DRIVING FASTENERS

Imre Berecz, Yorba Linda, Calif., assignor to Kaynar Mfg. Co., Inc., Fullerton, Calif.

Filed Dec. 30, 1971, Ser. No. 214,262
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—212 R **14 Claims**



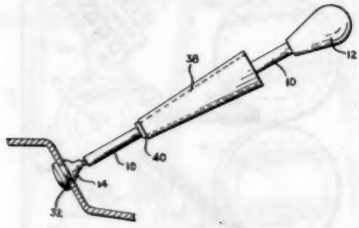
This construction relates to systematized apparatus for driving fasteners used in assembly of fabricated structures. The system incluces a power-operated portable tool for automatically delivering individual threaded female fasteners for attachment to a cooperating bolt and sequentially rotating the fastener to form a bolted connection. The construction provides a supply of fasteners, a feeding mechanism to deliver individual fasteners to a driving station, and an automatically controlled power tool for drivably rotating the fastener. The construction has particular utility in driving fasteners having external wrenching surfaces of a diametral dimension less than that of the base of the fastener.

3,750,258

INSERTION TOOL FOR TIRE VALVE STEMS

John J. Sampo, 14001 Brenan Way, Santa Ana, Calif.

Filed Sept. 16, 1971, Ser. No. 181,151
Int. Cl. B23p *19/04*
U.S. Cl. 29—221.5 **9 Claims**



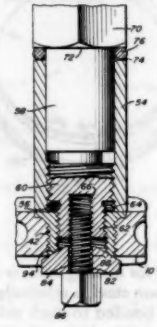
A tool for the insertion of valve stems in the wheel rims for tubeless tires is disclosed. The tool avoids the common practice of removing the tire from the rim for replacement or insertion of the valve stem. The tool is entirely hand powered and operated and comprises a push rod slidably mounted in a body sleeve which has a tapered interval wall with a very slight included angle, less than 10°, so that the rod can be pushed with a minimum of force to compress the bulbous end of the stem until it is discharged into the hole of the rim. The discharge face of the sleeve has a tip that inserts into the hole with an outside shoulder that bears against the rim as the rod is pushed through the sleeve to steady the sleeve and hold it in place.

3,750,259

METHOD AND APPARATUS FOR REPAIRING THREADS OF A THROUGH BORE BY INSTALLING A THREADED SLEEVE

Thomas L. Timmons, 380 E. Benwood St., Covina, Calif.

Filed Dec. 14, 1970, Ser. No. 97,845
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **4 Claims**



An assemblage of components for use in renewing damaged threads of a bore and including (1) a reamer tool including a first inserted smooth cylindrical pilot end portion for reaming a bore with damaged threads to a smooth cylindrical over-size bore and including a tail portion for forming a counterbore at the outer end of the over-size bore, (2) a right hand threaded tap for forming right-hand threads in the over-size bore and including a smooth cylindrical head end pilot portion snugly receivable within the over-size bore, (3) a right-hand threaded shank including a diametrically enlarged head and a jam-type nut threadedly engaged therewith with left-hand threads and threadedly engageable in an inside and outside right hand threaded sleeve-type insert for installation within the threaded over-size bore, (4) an inside and outside right hand threaded sleeve insert and (5) a threaded nut-type flaring tool including a through compression bolt threadedly engageable in a blind bore formed in the first inserted end of the sleeve insert installation shank for flaring the first inserted end of the sleeve insert in the corresponding end of the threaded over-size bore. The reamer is of course initially utilized to enlarge a threaded bore having damaged threads after which the tap is utilized to form righthand threads in the enlarged bore. The sleeve insert installation tool is thereafter utilized to turn the externally threaded sleeve insert into tight seated engagement within the threaded enlarged bore and the flaring tool with its companion compression bolt is thereafter utilized to flare the inner end of the sleeve insert within the threaded enlarged bore so as to prevent loosening of the insert within the threaded enlarged bore and removal of the insert from the threaded enlarged bore.

3,750,260

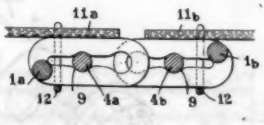
PROCESS FOR THE MAKING OF SLIDE FASTENERS, MEANS FOR CARRYING OUT THIS PROCESS AND FASTENER CHAIN MADE BY SAID PROCESS

Horst Jakob, Choisy-le-Roi, France, assignor to Societe Financiere Francaise de Licences et Brevets, Choisy-le-Roi, France

Filed Dec. 3, 1971, Ser. No. 204,593
Claims priority, application France, Dec. 8, 1970, 7044071
Int. Cl. B23p *11/00, 19/04*; **B21f** *45/18*
U.S. Cl. 29—408 **6 Claims**

The invention provides a process, for the manufacture of a continuous chain of two rows of linking components for the making of slide fasteners out of two rows each consisting of a thread shaped into a spiral inside the whorls of which a longitudinal cord or strand is positioned, the improvement that

the said cord or strand is placed in an intermediate position in the width of each row by assembling the two corresponding rows while causing the linking components of each row to penetrate more deeply between the whorls of the other, in order to push back the length-ways inside cord or strand in the



latter row, whereafter these two rows are fixed on to two supporting tapes by means of lines of stitching, the stitches of said lines being inserted inside the free spaces between the cord or strand inside each row and the portions connecting the successive whorls thereof.

3,750,261

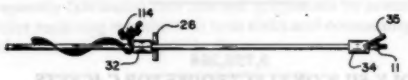
MEANS FOR MODIFYING SUCKER ROD

Jesse H. Iglehart, and Hilary H. Iglehart, both of Odessa, Tex., assignors to Rodco, Inc., Odessa, Tex.

Filed Aug. 9, 1971, Ser. No. 170,110

Int. Cl. B23p *19/02*

U.S. Cl. 29—427 **8 Claims**



Method and apparatus for removing a scraper apparatus from the outer peripheral wall surface of a sucker rod comprising pulling the rod through a die wherein the die has an inner surface which circumferentially and slidably surrounds a marginal exterior length of the rod so as to enable part of the die to abuttingly engage the scraper apparatus in a manner which strips the scraper free from the rod.

3,750,262

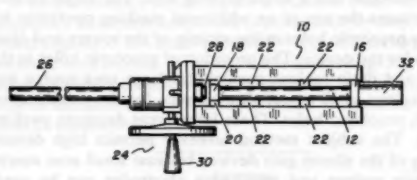
METHOD AND APPARATUS FOR EXTRACTING LODGED PROJECTILES

Willis H. Taylor, III, Clifton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1971, Ser. No. 192,100

Int. Cl. B23p *19/02*

U.S. Cl. 29—427 **7 Claims**



A method for removing lodged projectiles wherein said method comprises the steps of: removing a barrel containing lodged projectile from a weapons system having a detachable launch barrel; placing the removed barrel in an elongated cradle having one opening in each of two end walls; aligning the longitudinal axis of the barrel with the center of said two openings; positioning the shaft of a torque-to-thrust jack in axial alignment with said openings, said one of openings surrounding the breech end of the barrel; advancing said shaft until its forward end makes contact with the lodged projectile; and further advancing said shaft until the lodged projectile is pushed out of the muzzle of the barrel. The forward tip of the shaft includes a concave rubber disc for frictionally engaging the rear end of the projectile, whereby the shaft rotates with the advancing projectile.

3,750,263

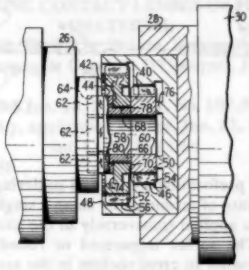
METHOD FOR PRODUCING AN ASSEMBLY BY FRICTION WELDING

Ronald L. Satzler, Metamora, and Marion R. Calton, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 1, 1971, Ser. No. 148,780

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 **5 Claims**



Cluster gear assemblies are produced by a method and apparatus which join a plurality of pre-machined gears by a common joining member. The plurality of gears are held in relative nonrotative relationship by special holding means which further establish precise angular and axial alignment between the gears and axial alignment between the joining member and the gears. Joining of the various members to produce the assembly is accomplished by friction welding.

3,750,264

METHOD OF MANUFACTURING ROD, WIRE OR TUBE SHAPED PRODUCTS OF COMPOUND MATERIAL BY MEANS OF HYDROSTATIC EXTRUSION

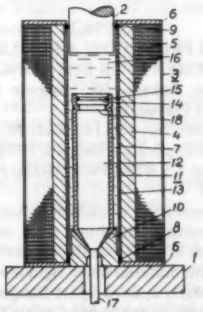
Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vastera, Sweden

Filed Feb. 10, 1972, Ser. No. 225,077

Claims priority, application Sweden, Mar. 10, 1971, 3048/71

Int. Cl. B21c *23/22*

U.S. Cl. 29—474.3 **3 Claims**



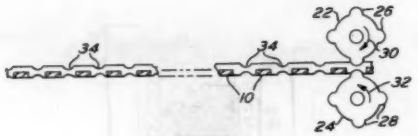
For manufacturing rod, wire or tube-shaped products of compound material, a billet which is composed of a core and a casing, of different materials, selected from aluminum and

cooper and their alloys, is hydrostatically extruded through a die. Either the core or the casing or both at their facing surfaces have an amount of oxides thereon which is substantially less than the amount required to form a continuous layer of molecular thickness when the billet is extruded with a selected extrusion ratio.

3,750,265
METHOD OF PREFORMING SOLDER TO A PLURALITY OF TERMINALS

Robert H. Cushman, Bethayres, Pa., assignor to Jade Corporation, Huntingdon Valley, Pa.

Filed Apr. 5, 1972, Ser. No. 241,156
Int. Cl. B23k 31/02
U.S. Cl. 29—471.3 **13 Claims**



A method of preforming solder and soldering a plurality of leads to a plurality of terminals by using a single heating step. A solder strip is applied transversely to the axis of a plurality of terminals. The solder is pressed or rolled in place and shaped to be thinner in cross section in the area between the terminals.

3,750,266
FLOW CONTROL OF FILLER ALLOY

Tsutomu Hikido, Sunnyvale, and Craig R. Moyer, Palo Alto, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation of Ser. No. 881,913, Dec. 3, 1969, abandoned. This application Aug. 25, 1972, Ser. No. 283,695
Int. Cl. B23k 31/02
U.S. Cl. 29—490 **1 Claim**

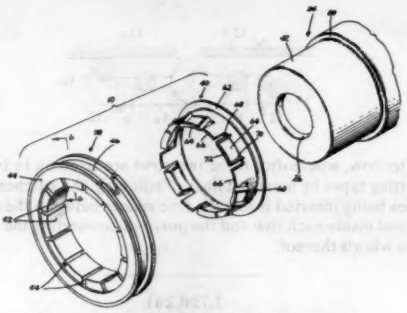
A method for controlling the flow of filler alloy used in the brazing of metals such as stainless steel. The method consists of applying on the surface of the metal a layer of metal which acts as a barrier to the filler alloy, thereby confining the alloy to the desired area to be brazed and thus preventing its flow over undesired areas of the surface of the metal. The flow control metal may, for example, be applied to the surface by scribing, plating or vapor-deposition depending on the type of flow control metal utilized.

3,750,267
METHOD FOR PRODUCING A RESILIENT MOUNTING ARRANGEMENT FOR ROTATING MACHINES

Charles W. Otto, Dekalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 869,147, Oct. 24, 1969, Pat. No. 3,685,773. This application Dec. 20, 1971, Ser. No. 209,566
Int. Cl. B21d 39/00; B23p 11/02
U.S. Cl. 29—507 **8 Claims**

A method of producing a resilient mount attached to an end structure of a rotating machine, such as a dynamoelectric machine, in which in one form the resilient mount includes an annulus of resilient material and a rigid member formed with a plurality of angularly spaced apart flanged sections disposed about an axis. Initially the spaced apart flanged sections are disposed in the bore of the annulus and have free ends normally inclined toward the axis. These free ends are then forced outwardly, away from the axis of the rigid member, into interfitting engagement with the inner region of the annulus as the rigid member is being pressed into firm frictional engagement with the end structure. In the assembled structure there is provided restrained relative movement between the components;

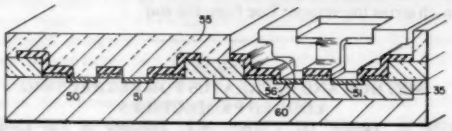


the annulus, the rigid member, and the structure on which the other two parts are attached, by a method which is relatively simple and inexpensive to practice.

3,750,268
POLY-SILICON ELECTRODES FOR C-IGFETS

Raymond C. Wang, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 10, 1971, Ser. No. 179,398
Int. Cl. H01l 11/14; B01j
U.S. Cl. 29—571 **8 Claims**



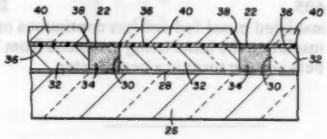
Poly-silicon electrodes are provided for use with source and drain regions of insulated gate field-effect transistors as well as a method for contacting silicon gate devices utilizing poly-silicon electrodes and a single etching step. The single etching step obviates the use of an additional masking operation for forming preohmic holes in the vicinity of the source and drain regions for the device. The provision of preohmic holes at the source and drain regions necessitates large area source and drain regions so as to permit clearance for the metallization through preohmic holes. These large areas decrease packing density. The subject method however permits high density packing of the silicon gate devices because small area source and drain regions and small area electrodes can be used. Because of the use of poly-silicon electrodes, the process allows the probing of the chip at intermediate stages in device fabrication. This allows the elimination of those chips which have not satisfied design limitations at an intermediate step in the fabrication process. In the process the source and drain regions and the electrodes are doped simultaneously in a diffusion step. In this diffusion process part of the source and drain regions are diffused through that portion of the poly-silicon contact extending over the source or drain region. In this manner ohmic contact is made between the electrodes and the underlying source or drain regions.

3,750,269

METHOD OF MOUNTING ELECTRONIC DEVICES

Richard B. Small, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 6, 1970, Ser. No. 52,320
Int. Cl. B01j 17/00
U.S. Cl. 29—580 8 Claims



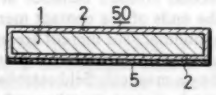
In a method of mounting electronic devices, a gold lead is connected to each contact pad of each wafer in a semiconductor slice. In a parallel step, a body of wafer receiving material is secured to a support and is thereafter separated into wafer receiving members. Then, a layer of epoxy resin is applied to the slice, and the slice is secured to the wafer receiving members with each wafer mounted on a wafer receiving member and with the gold leads positioned between the wafers and the wafer receiving members. After the mounting step, the wafers comprising the slice are separated and the wafer receiving members are disengaged from the support. The resulting wafer-wafer receiving member subassemblies are subsequently fabricated into thermal printheads by mounting the wafer receiving members on heat sinks and connecting electrical conductors to the gold leads.

3,750,270

SEMICONDUCTOR STRAIN SENSITIVE ELEMENT OF PREDETERMINED TEMPERATURE COEFFICIENT OF RESISTANCE AND METHOD OF MAKING SAME

Katsuyuki Ishii, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Japan

Filed Aug. 4, 1970, Ser. No. 60,830
Claims priority, application Japan, Aug. 7, 1969, 44/62575
Int. Cl. B01j 17/00
U.S. Cl. 29—580 2 Claims



A semiconductor strain sensitive element made by doping impurities into a semiconductor crystal wafer, or strip, to form plural regions of the same conductive type, but different temperature coefficients of resistance, and varying the proportionate volumes of said regions by polishing, or etching, to obtain an element having a predetermined temperature coefficient of resistance.

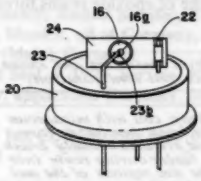
3,750,271

TRANSISTOR STRUCTURE AND METHOD OF MANUFACTURE

Jean M. Dupuis, Kanata, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

Filed Jan. 31, 1972, Ser. No. 222,174
Claims priority, application Canada, Jan. 28, 1972, 133,394
Int. Cl. B01j 17/00
U.S. Cl. 29—587 4 Claims

This invention relates to an improved transistor structure, particularly a "12-type" germanium alloy transistor. The invention also relates to a method of manufacturing such a transistor, wherein the semiconductor device is free to move during attachment thereto of the connecting leads, thereby eliminating stress upon the device.

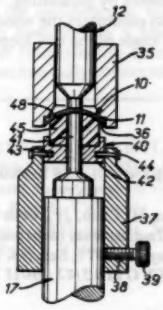


3,750,272

MACHINING CONTACT LENSES OF FLEXIBLE MATERIAL

Gerard Gomond, Paris 17e, France, assignor to Essilor International (Compagnie Generale D'Optique), Joinville le Pont, France

Filed Jan. 18, 1971, Ser. No. 107,068
Claims priority, application France, Jan. 22, 1970, 7002216
Int. Cl. B23p 13/04
U.S. Cl. 29—558 9 Claims



A method for machining contact lenses of flexible material such as silicone. The lens is centered on two rotary spindles of which one is a driving spindle and is clamped therebetween. An annular supporting member having a surface with the same curvature as the face of the lens maintains the shape of the flexible lens during rotation of the lens until it is hardened by the spraying of a jet of cooling fluid which may be liquid nitrogen or liquid air. The spraying of the lens continues while the diameter is reduced, if such reduction is necessary. The supporting member is then removed and the peripheral edge of the lens is machined.

3,750,273

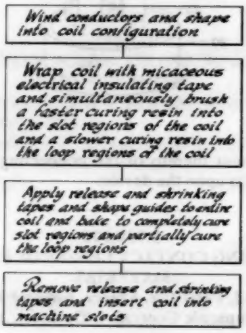
METHOD OF MAKING FLEXIBLE LOOP, HARD SLOT COILS FOR DYNAMOELECTRIC MACHINE WINDINGS

Norman Anthony Beddows, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 18, 1971, Ser. No. 199,845
Int. Cl. H02k 15/00
U.S. Cl. 29—596 5 Claims

A flexible loop, hard slot coil is described wherein the preformed coil is wrapped over the entire coil length with a single micaceous insulating tape. The resin system applied between tape layers wrapped about the slot regions of the coil, however, contains a greater weight percentage of cross-linking catalyst than is contained in the resin system applied atop the loop regions of the coil to produce a differential cure rate for the different sections of the coil, i.e., the resin system in the

slot sections of the coil becomes fully cured during subsequent baking of the coil while the resin system in the loop portions of the coil remains partially cured to retain flexibility therein. Flexible loop, hard slot coils also can be fabricated by varying the weight percentage of epoxide resins forming a resin blend


Wind conductors and shape into coil configuration
Wrap coil with micaceous electrical insulating tape and simultaneously brush a faster curing resin into the slot regions of the coil and a slower curing resin into the loop regions of the coil
Apply release and shrinking tapes and shape guides to coil and bake to completely cure slot regions and partially cure the loop regions
Remove release and shrinking tapes and insert coil into machine slots

to produce a more rapid cure rate in the slot portions of the coil relative to the loop portions of the coil. The resultant flexible loop, hard slot coil not only facilitates winding of dynamoelectric machines by permitting "raising of the jump" in a cold state but also eliminates the need for a high degree of precision in the drop angle of the coil loops.

3,750,274

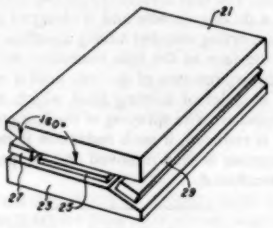
METHOD OF MAKING GLASS BONDED RECORDING HEADS

John Bealle, and John H. Cash, Jr., both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1971, Ser. No. 148,038

Int. Cl. G11b 5/42; H01f 7/06

U.S. Cl. 29—603 **8 Claims**



Disclosed is a method of fabricating recording heads, or transducers, for an electromagnetic recording device, and the resulting product. In a preferred embodiment, a pair of selectively geometric ferrite slabs, e.g., having a beveled edge, are selectively positioned and spaced apart by a sheet of nonmagnetic metallic foil of a desired gap thickness. Low melting temperature glass is inserted in each of two grooves formed by the beveled edges at opposite edges of the ferrite slabs. The structure is placed in a furnace and the glass is melted to fill the grooves, thus bonding the slabs together. The structure is then severed into a plurality of recording heads of the desired size and shape.

3,750,275

MANUFACTURE OF ELECTRICAL COILS

Albert Ernest Kay, and Arthur Wellesley Stewart Clark, both of London, England, assignors to Aluminium Foils Limited, London, England

Filed Aug. 23, 1971, Ser. No. 174,203

Claims priority, application Great Britain, Aug. 28, 1970, 41,513/70

Int. Cl. H01f 7/06

U.S. Cl. 29—605 **2 Claims**

A lacquer insulated metal foil coil has continuous interturn and end face insulation the latter being produced from lacquer exuded from between the turns in a heating step.

3,750,276

MAGNETIC REED CONTACT UNIT PRODUCING APPARATUS

William Dennis Bishop, Beeston, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Apr. 5, 1971, Ser. No. 131,194

Claims priority, application Great Britain, June 26, 1970, 31,049/70

Int. Cl. H01h 11/00

U.S. Cl. 29—622 **5 Claims**

Apparatus for, and methods of, producing magnetic reed contact units wherein a first contact member which is releasably held at one end thereof by support means, magnetically supports a second contact member at the other end thereof such that the ends of the contact members are overlapping and the longitudinal axes thereof are in alignment, the alignment being maintained during subsequent stages of the production method by a magnetic field established in or in the vicinity of the second contact member, wherein a double open-ended enclosure member is passed over the contact members, the means for establishing the aligning magnetic field being de-energised and removed to facilitate this operation, and wherein the aligned contact members are sealed within the enclosure member such that end portions thereof are overlapping and separated from each other by a desired amount.

3,750,277

METHOD OF MAKING LEAD FRAMES FOR SEMICONDUCTOR DEVICES

Marvin B. Happ, Hingham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

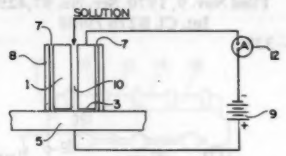
Filed Oct. 23, 1970, Ser. No. 83,578

Int. Cl. H01b 13/00

U.S. Cl. 29—624 **9 Claims**

A method of producing lead frames for semiconductor devices in which a sheet of conductive material is initially

removed by chemical or electrochemical milling to produce a substantially stress-free reduced thickness portion therein. A



lead frame is then stamped from the sheet having lead fingers with substantially stress-free ends which are formed from the thinner material of the reduced thickness portion.

3,750,278

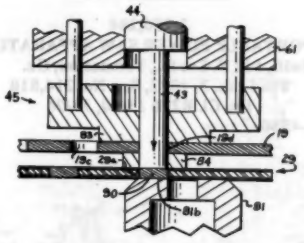
PRINTED CIRCUIT BOARD WITH THROUGH CONNECTION AND METHOD AND MACHINE FOR MAKING THE THROUGH CONNECTION

Donald J. Baker, Williamsville, N.Y.; Stanley J. Gartner, Emporium, Pa., and Robert S. Oberg, Kenmore, N.Y., assignors to Sylvania Electric Products, Inc., Buffalo, N.Y.

Division of Ser. No. 813,514, April 4, 1969, abandoned. This application July 17, 1970, Ser. No. 62,772

Int. Cl. H05k *3/00*

U.S. Cl. 29—628 **4 Claims**



A printed circuit board having a through connected between conductors on opposite sides of the board which is provided by a conductive element press-fitted in a hole extending through the conductors and insulating material of the circuit board and peened at both ends. The conductive element is inserted into the printed circuit board by punching a hole in the board at a predetermined receiving position, positioning conductive stock material between the retracted punch and the hole, positioning an anvil to enclose the hole on the side of the board opposite that facing the punch, and actuating the punch to remove the conductive element from the stock material, press the element into the hole and peen the element in one stroke. A machine for inserting the conductive element into the printed circuit board comprises a mechanism for holding and indexing the printed circuit board, a punch, a reel supported on one side of the punch and upon which a strip of the conductive stock material is wound, a punch head including a stripper and die assembly in registry with the punch and within which conductive strip material supplied by the reel is slidably retained, a mechanism for indexing the strip material, a female die in registry with the punch on the side of the circuit board opposite that facing the punch and adapted to be laterally shifted so as to function as an anvil with respect to said punch, and a cammed disk having three cam surfaces for actuating said punch, punch head and shiftable die through appropriate followers and linkages.

3,750,279

DRY SHAVER CONSTRUCTION

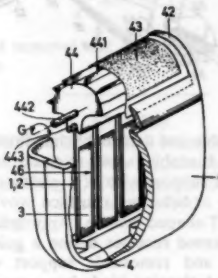
Christian Cobarg, Steinbach; Erich Fenner, Gauting; Max Guntersdorfer, Munich; Walter Heywang, Neukeferloh; Franz Otto, Munich; Rudolf Schofer, Ebersberg, and Helmut Thomann, Munich, all of Germany, assignors to Braun AG, Frankfurt (Main), Germany

Filed Sept. 9, 1971, Ser. No. 179,066

Claims priority, application Germany, Sept. 11, 1970, P 20 45 152.9

Int. Cl. B26b *19/12, 19/02*

U.S. Cl. 30—43.9 **20 Claims**



A dry shaver has an oscillatable shear unit and a drive connected with the unit for oscillating it, the drive being composed of at least one body having a plurality of bi-laminar oscillatory elements of ferro-electric ceramic material which are electrically and mechanically connected in parallel.

3,750,280

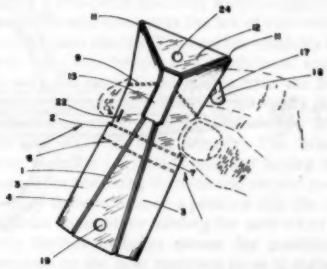
MULTIPLE PURPOSE FOLDABLE PLASTIC HANDLE FOR RAZORS OR THE LIKE

Christian LePaliscot, and Juan Quintero Venegas, both of Carrera 16 No. 39A-99, Bogota, Colombia

Filed May 1, 1972, Ser. No. 249,228

Int. Cl. B26b *21/00*

U.S. Cl. 30—85 **3 Claims**

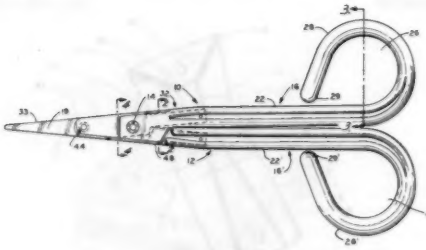


A foldable plastic handle for razors or like articles is provided with a supporting head for bearing a shaving blade assembly, a brush, depilating device or similar articles of a toilet set. The handle according to the invention is comprised of a plastic blank provided with channels so patterned on both faces thereof as to define a number of flat sections which are foldably hinged to each other through the hinge joint formed by foldable channel bottom webs, the folding operation of the flat sections of the plastic blank being carried out to build up a locked handle assembly comprising the handle shank properly together with the bearing head ready for its intended use; from the condition of assembled handle it can be dismounted into the blank extended position, and then, the so opened out blank can be folded to a closed form in which the device has a smaller size having a rectangular box shape suitable to be easily handled as personal effects.

3,750,281
WIRE STRIPPING TOOL
William F. Belling, Rte. 3, Box 156, La Crosse, Wis.
Filed Dec. 20, 1971, Ser. No. 209,889
Int. Cl. H02g *1/12*
U.S. Cl. 30—90.8 5 Claims

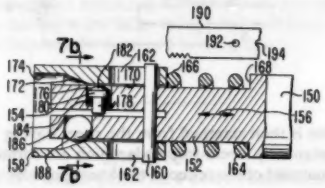
A readily attachable and detachable handtool for use in the telephone industry. It enables a user to cleave and strip off the usual web attached support wire of a plastic-covered cable. An elongated body or head has a surface provided at a rearward end with a T-shaped handle. Appropriately grooved abutments and oriented recesses define a guideway for the readily insertable and removable support wire. An appropriately mounted cleaving blade has a reversible cutting edge bridging the guideway and which comes into play as the tool is manually pulled along the web-attached support wire.

3,750,282
SCISSORS
Douglas G. Eaton, Lakewood; Wade L. Wacker, Ashland, and Theodore C. Appleman, Mansfield, all of Ohio, assignors to Web Products Inc., Ashland, Ohio
Continuation-in-part of Ser. No. 77,814, Oct. 5, 1970, abandoned. This application Oct. 4, 1972, Ser. No. 294,932
Int. Cl. B26b *13/02, 13/28*
U.S. Cl. 30—254 4 Claims



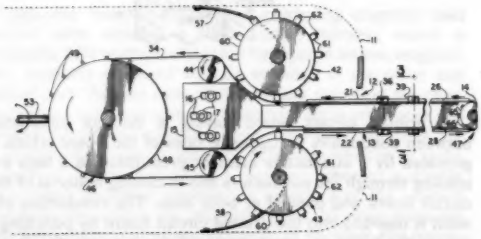
The specification and drawings disclose scissors which are particularly suited for use as disposable surgical scissors. The embodiment shown comprises a pair of pivotally interconnected handle and blade units with each handle and blade unit including an elongated molded plastic handle section having first and second end portions with a finger receiving loop at the first end portion and a blade member molded in the second end portion. The blade member is formed from a relatively thin strip of metal and has a cutting blade section and a somewhat narrower shank end. The shank end extends longitudinally into the handle section, whereas the cutting blade section extends outwardly from the handle section. Preferably, the shank end is substantially completely molded within the handle. Additionally, the second end portion of the handle preferably extends outwardly along one lateral face of the cutting blade section and means are provided for connecting the outermost end of the second end portion to the blade.

3,750,283
BLADE ATTACHMENT MEANS FOR SABER SAW ASSEMBLY
Simon J. Hoffman, P.O. Box 748, Saratoga, Calif.
Filed Nov. 9, 1970, Ser. No. 97,425
Int. Cl. B27b *19/08*
U.S. Cl. 30—338 10 Claims



Means for attaching a saber saw blade to the reciprocating portion of a saber saw assembly, wherein the blade can be releasably secured to the reciprocating portion which has means biased in a manner to hold the blade in such position. A number of embodiments of the attachment means provide for quick coupling and release of a saber saw blade to the assembly. In one group of embodiments, a blade holding means utilizes a torsion spring and in a second group of embodiments, the attachment means utilizes a compression spring. The support for the attachment means can be provided with any one of a number of improved abutments for engaging a workpiece. The support can be provided with means for moving the blade in a direction away from the kerf in a workpiece.

3,750,284
PORTABLE POWER SAW APPARATUS
Walter D. Swift, 617 E. Lee St., Thomaston, Ga.
Filed Jan. 3, 1972, Ser. No. 214,818
Int. Cl. B27b *13/10, 33/06*
U.S. Cl. 30—380 10 Claims



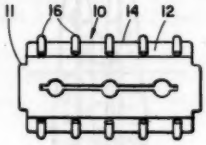
A saw generally of the keyhole or saber saw variety. The saw blade comprises an endless band driven in one direction and having a number of cutting members which are spaced apart from the plane of the band. The saw band travels along a channel, and the cutting members extend outside the channel for cutting exposure to a work piece. The saw can be connected with a conventional portable drill for motive power, or alternatively can be provided with a self-contained motor.

3,750,285
GUARDED RAZOR EDGE APPARATUS
Gunnar P. Michelson, 505 Sea Ranch Dr., Santa Barbara, Calif.
Filed July 6, 1970, Ser. No. 52,527
Int. Cl. B26b *21/54*
U.S. Cl. 30—346.58 14 Claims

A razor blade has a guarded cutting edge comprising a multiplicity of relatively short and thin guard members bent into

relatively V-shaped form and permanently secured in substantially equidistantly spaced relation to the blade edge.

A method for applying the guard members to the blade edge uses guard members having a hardness which is less than that

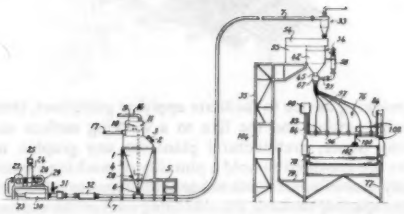


of the blade edge. The guard members are bent over the blade edge using the relatively greater hardness of the blade edge to slightly deform the guard members and thereby clamp them to the blade edge.

3,750,286
APPARATUS FOR SUPPLYING SALT TO CURD IN CHEESE MANUFACTURE

Edmund Kerran Whelan, Hawera, New Zealand, assignor to The National Dairy Association of New Zealand Limited, Wellington, New Zealand

Filed Jan. 6, 1972, Ser. No. 215,780
Int. Cl. A01j *25/00*
U.S. Cl. 31—46 **8 Claims**



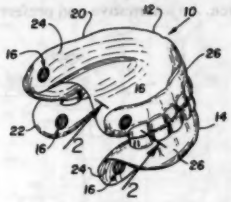
The apparatus comprises an endless conveyor having an upper run on one end of which milled and unsalted curd can be placed so that the curd will be carried as a layer to the other end of the run for discharge. A salting mechanism, including an elevated salt distributing hopper, is adapted to feed salt to a salt distributing boom lying over the upper run of the conveyor, the salt being conveyed by salt feed tubes extending from the salt distributing hopper to the boom. A sensing device is positioned to move upwardly and downwardly with rise and fall in the level of the layer of curd on the upper run of the moving conveyor and the rate of flow of salt from the storage hopper through the feed tubes to the distributing boom is controlled in response to the upward and downward movements of the sensing device.

3,750,287
VALVE DEVICE FOR DENTAL PROSTHESIS

Jerome E. Bloom, 171 Atlantic Ave., Hempstead, N.Y.

Filed Aug. 25, 1972, Ser. No. 283,844
Int. Cl. A61c *13/24*
U.S. Cl. 32—3 **5 Claims**

A valving device for use with dental prosthesis in which the device includes a sleeve of a length in excess of the width of the wall of a dental plate in which the same is to be imbedded or contained and a valve structure retained within the sleeve

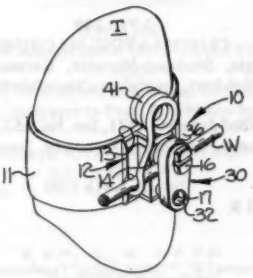


for subsequent removal and substitution therefor by a new valve structure.

3,750,288
ORTHODONTIC ARCH WIRE BRACKET ASSEMBLY

Fay H. Culbreth, 2300 Red Fox Trl., Charlotte, N.C.

Filed May 9, 1972, Ser. No. 251,786
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **9 Claims**



An orthodontic arch wire bracket assembly for attachment to a tooth band for receiving an elongate arch wire and being characterized by a two-piece assembly which is easy to assemble and disassemble and eliminates the use of conventional tie wires, pins and by-pass clamps. The bracket assembly includes a body member for attachment to a tooth band and having first and second post members extending from the front surface of the body member and protruding outwardly therefrom and being spaced apart to form an orthodontic arch wire bracket receiving channel therebetween. The bracket assembly further includes a retaining member having means at each end thereof for receiving the first and second post members for assembly thereon in such a position that the retaining member spans the channel for holding the arch wires therein. The assembly further includes means for positioning the retaining members on the post members so as to maintain the retaining member outwardly from the body member for maintaining the channel to accommodate the arch wire and means for maintaining the retaining member on the post members.

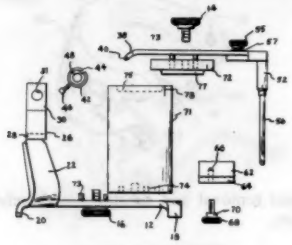
3,750,289
CENTRIC RELATING DEVICE

Niles F. Guichet, 320 Olympia Pl., Anaheim, Calif.

Filed July 26, 1971, Ser. No. 166,187
Int. Cl. A61c *11/00*
U.S. Cl. 32—32 **10 Claims**

A device is described which can be used to orient, precisely, dental casts in centric occlusion. The device comprises upper and lower frames that have dental cast support means and that are hinged together in a joint along the condylar axis. The joint permits only pivotable movement of the members in a medial plane. One of the frames, preferably the lower, has

centering pivot pins with tapered ends that seat in mating recesses in the joint component of the other frame. A centric inspection or gauge block is provided together with index members that can be secured to the frames to permit inspection of the device. An alternative and preferred centric inspection means comprises a pair of blocks, one of which bears at least one index mark and the other of which supports a magnification lens opposite the mark with a calibrated field to observe any inaccuracies in the centric relation of the frames. The device is used to mount the dental casts to their support rings while using check bite means to orient the casts.



3,750,290

CLOTH LAYING MACHINE

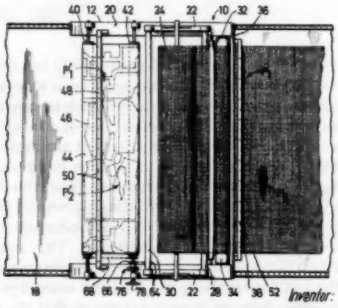
Roland Stengle, Stuttgart-Munster, Germany, assignor to Krauss U. Reichert, Spezialmaschinenfabrik, Fellbach, Germany

Filed June 16, 1971, Ser. No. 153,672

Claims priority, application Germany, June 20, 1970, P 20 30 559.3

Int. Cl. A41h *1/00*

U.S. Cl. 33—1 R **9 Claims**



Aparatus for determining whether an imperfection in fabric will lie within or without a pattern to be cut out from the fabric while the fabric is being laid out on a cutting table by means of a carriage for a supply of the fabric to be laid out which also carries a replica of the pattern to be cut and means to move the replica to correspond with the laying out of the fabric and indicia means to correlate the positions of imperfections in the cloth with the replica of the pattern to be cut.

3,750,291

PANTY HOSE MEASURING MEANS

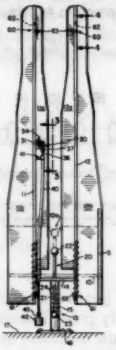
Caley A. Foreman, Grenada, Miss., assignor to U. S. Industries, Inc., New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,101

Int. Cl. A41h *1/00*

U.S. Cl. 33—2 A **3 Claims**

Panty hose measuring means having a pair of leg forms marked with length scales for measuring and inspecting the various parts of the garment, pressure responsive sensing means actuated by the garment being tested for uniformly fixing the proper position of the garments on the leg forms for measuring, and stride or crotch measuring means for determining the crotch position of the garment.



3,750,292

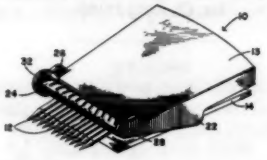
MARKING DEVICE

Fred R. E. Dodge, 630 Larchmont Dr., Daly City, Calif.

Filed Jan. 11, 1971, Ser. No. 105,209

Int. Cl. B43l *13/00*

U.S. Cl. 33—41 D **7 Claims**



A marking device to facilitate applying guidelines, texturing or script writing and the like to a working surface such as drafting paper, architectural plans, or any graphic media. Means are provided to hold a plurality of marking elements in equally spaced-apart relationship with means to selectively adjust the spacing between the extending ends of the elements.

3,750,293

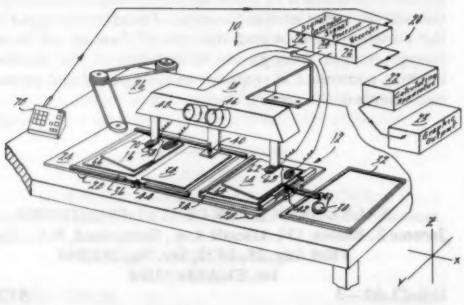
STEREOPLOTTING METHOD AND APPARATUS

Robert B. Forrest, Union Lake, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 10, 1971, Ser. No. 122,844

Int. Cl. B43l *13/16*

U.S. Cl. 33—20 D **40 Claims**



A method and apparatus for obtaining three-dimensional positional or coordinate information for a scene from two

stereo images of that scene. An operator views a stereoscopic image of a scene which need not be in exact proportion to that scene, but can be distorted or warped. The operator traces along and records image positions of all conjugate points or lines of interest in the overlap area of the stereo images. Calculations convert these recorded image positions to the three-dimensional coordinates the actual points had in the image scene.

3,750,294

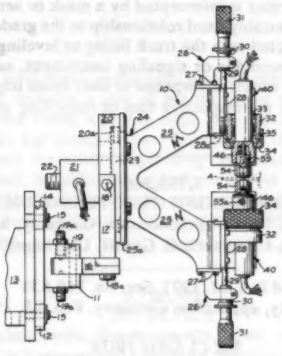
FLOATING THICKNESS MONITOR

William H. Belke, Peoria; Weldon L. Phelps, Dunlap; William E. Streight, East Peoria, and Robert W. Untz, Hanna City, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 18, 1971, Ser. No. 154,386

Int. Cl. G01b 7/06

U.S. Cl. 33—147 L **1 Claim**



An apparatus for measuring the thickness of travelling sheet materials employs a pair of linear displaceable transducers which are disposed in aligned opposition so their respective sensors contact the opposite side of the sheet material, with the sensors mounted so they can "float" with the material to compensate for vibration or movement while maintaining a separation equal to its thickness. Each transducer output is the analog of the displacement of its sensor from a zero position and these analogs can be combined to produce a difference output which is directly proportional to the instantaneous material thickness between the two sensors. The output signal can operate a visual display or recorder indicating the thickness dimension of the sheet material at all times.

3,750,295

MEASURING MACHINE

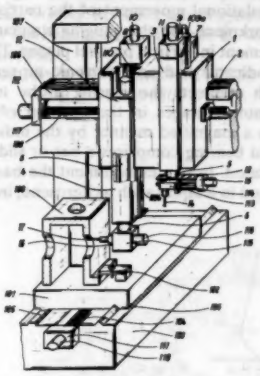
Edwin Nordmann, and Gerhard Erler, both of Dresden, Germany, assignors to Veb Werkzeugmaschinenkombinat "Fritz Heckert" Karl-Marx-Stadt, Karl-Marx-Stadt, Germany

Filed July 22, 1971, Ser. No. 165,148

Int. Cl. G01b 7/00

U.S. Cl. 33—174 L **23 Claims**

A measuring machine has two independently driven spindles mounted on two independently driven slides on an independently driven carriage, and a feeler device is mounted on each spindle and has a feeler for sensing a body to be measured, the feelers being connected by an electric measuring circuit with means for recording distances measured along the body.



3,750,296

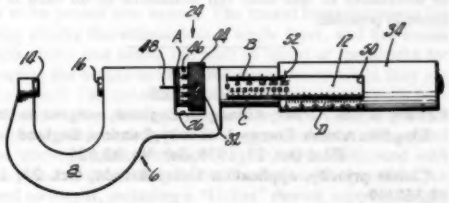
PRECISION MEASURING DEVICE HAVING TWO SCALES

George F. Kindl, Newington, and Orean E. Michaud, Bristol, both of Conn., assignors to Pratt & Whitney Inc., West Hartford, Conn.

Filed Sept. 9, 1971, Ser. No. 178,897

Int. Cl. G01b 3/18

U.S. Cl. 33—166 **3 Claims**



A micrometer has a frame, including a hub portion, with a threaded spindle mounted for longitudinal movement. The spindle is longitudinally displaced by a rotatable drive member mounted in the frame in threaded engagement with the spindle. A thimble is secured to the spindle for longitudinal movement over the hub portion of the frame. First and second scales, graduated in a first unit of measurement, are respectively imprinted on the drive member and the hub portion; and the third scale and a vernier scale, graduated in a second unit of measurement, are respectively imprinted on the hub portion and the thimble. The micrometer permits dual readout of physical dimensions.

3,750,297

ULTRA-ACCURATE GAUGING APPARATUS

Francis M. Linley, Jr., Banks Rd., Easton, Conn.

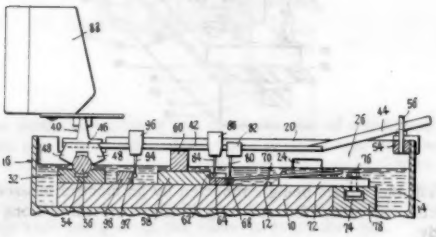
Filed Apr. 5, 1971, Ser. No. 130,991

Int. Cl. G01b 5/02, 5/16

U.S. Cl. 33—174 L **10 Claims**

An ultra-accurate apparatus for gauging the accuracy of workpieces such as screw threads and the like. The workpiece and an accurate gauging standard or template are disposed on

a base alongside each other, and are contacted respectively by pilot and sensing probes mounted on a single carriage which has a substantially friction-free fluid bearing arranged to provide for translational movement of the carriage horizontally along the workpiece and the gauging standard, and also for pivotal movement in vertical parallel planes. The carriage also carries an indicator and an electronic movement-amplfying means which connects the sensing probe to the indicator whereby minute changes in the position of the probe are evidenced in a magnified manner by the indicator. The friction-free fluid bearing comprises a bar or slide which is continuously rotated. In one embodiment the bar is at least partially immersed in a liquid such as kerosene, in which it slowly



turns. In another embodiment the bar is in air, and is either turned more rapidly or engaged with larger bearing surfaces, or both. Bearings of the carriage rest on the slide bar. Due to the provision of the specific type friction-free bearing of the invention and the carrying of the indicator (which is self contained) by the carriage, there are no trailing wires, flexible air tubes or any other connections whatsoever between the carriage and the base or other parts of the apparatus. Since the only contact between the carriage and the base is through the substantially friction-free liquid or fluid bearing, no adverse influences are brought to bear on the carriage, which might impair the readings of the indicator. In consequence, gauging to tolerances of less than ten millionths of an inch is consistently possible.

3,750,298

GAS GAUGES

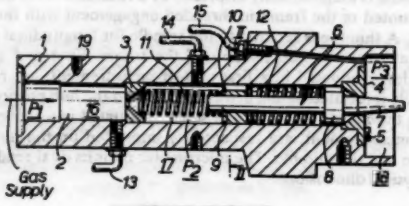
Edward Bruce Turner, Abindgon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 21, 1970, Ser. No. 82,681

Claims priority, application Great Britain, Oct. 24, 1969, 52,358/69

Int. Cl. G01b *3/22, 13/02*

U.S. Cl. 33—172 R **4 Claims**



A gas gauge for measuring strain of a specimen comprising a conduit for constraining a flow of gas and first and second gas flow restricting orifice members located in the conduit. The second member being located on the downstream side of the first member and a tapered throttling needle adapted to contact the specimen is arranged such that axial movement of the needle regulates the flow of gas through the orifice in the second member. The gas pressures upstream of said first member and downstream of the second member are measured and changes in the pressure in the region of the conduit between the first and second members are also to provide an indication measured of the strain of the specimen.

3,750,299

TRACK APPARATUS WITH LASER BEAM REFERENCE

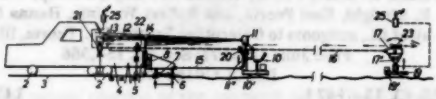
Franz Plasser, and Josef Theurer, both of Johannesgasse, 1010 Vienna, Austria

Division of Ser. No. 3,762, Jan. 19, 1970, Pat. No. 3,706,284. This application Aug. 30, 1971, Ser. No. 176,129

Claims priority, application Austria, Jan. 22, 1969, 646/69

Int. Cl. E01b *35/08, 35/10*

U.S. Cl. 33—287 **14 Claims**



A laser beam reference or datum in a track surfacer, liner or surveying apparatus is intercepted by a mask or sensor which is held in a measurably fixed relationship to the grade rail. This sensor is connected with the track lining or leveling tool, or a track position recorder or signaling instrument, and control signals from the sensor in response to laser beam impingement thereon operate the respective tool or recording or signaling instrument.

3,750,300

NORTH-SEEKING GYRO PENDULUM

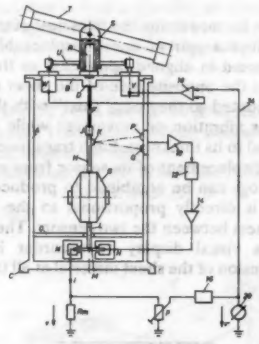
Hans Tumback, Uberlingen/Bodensee, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen/Bodensee, Germany

Filed Feb. 24, 1971, Ser. No. 118,538

Claims priority, application Germany, Feb. 25, 1970, P 20 08 702.9

Int. Cl. G01c *19/38*

U.S. Cl. 33—324 **7 Claims**



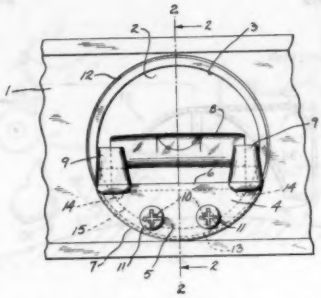
A gyro rotor case is suspended from a frame by a tape. Below the gyro case is a torque motor connected to the frame and gyro case. A pickoff produces an electrical signal which is a measure of the azimuthal deviation of the gyro case from the tortionally unstressed position of the tape and is used to control the torque motor. The current at the torque motor is used to produce an electrical signal which controls a servomotor through a servoamplifier. The servomotor adjusts an instrument for indicating north by rotational movement. The extent of the rotational movement produces an electrical signal which is fed back to the servomotor through the servoamplifier.

3,750,301

SPIRIT LEVEL WITH CLAMPING ACTION

George A. Johnson, Mequon, Wis., assignor to Johnson Products Company, Inc., Milwaukee, Wis.

Filed Feb. 18, 1971, Ser. No. 116,383
Int. Cl. G01c 9/28
U.S. Cl. 33—379 1 Claim



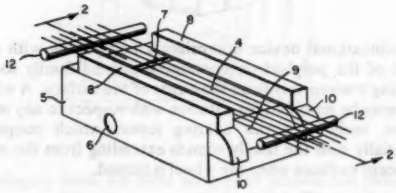
A spirit level frame is provided with an annular opening. A vial holder includes a pair of spaced clamp members which slip over the frame opening edge and are clamped to the frame, as by tightening screws. To assist the clamp in holding the members together, cooperating ridge and groove means are provided. In addition, projections on the holder and the surfaces of the screws are on an arc of a circle having the same radius as the opening edge for assisting in proper positioning of the holder.

3,750,302

JET DEVICE

Drexel Kermit Smith, Hendersonville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 23, 1971, Ser. No. 136,866
Int. Cl. F26b 13/00
U.S. Cl. 34—154 8 Claims



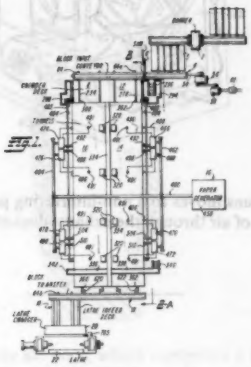
An apparatus for heat treating a plurality of filaments arranged in a ribbon-like array that includes a base having a planar surface, a pair of upstanding walls attached to the base between which the filaments pass for treatment and a transverse slot through the planar surface in communication with a source of heated pressurized fluid, improves uniformity and efficiency of heat transfer to the filaments. A particular relationship between the slot, the planar surface of the base and the walls enables the fluid stream issuing from the slot to first pass upwardly through the filaments then turn downwardly and attach to the planar surface at a point downstream of the slot where it flows parallel to the filament array to provide an extended heating zone.

3,750,303

STEAM TUNNELS FOR TREATING LOGS AND METHOD OF TREATMENT

Thomas W. Gates, Wesley R. Gates and Vayne R. Davis, all of Gainesville, Fla., assignors to Thomas E. Gates & Sons, Inc., Gainesville, Fla.

Filed July 9, 1971, Ser. No. 161,256
Int. Cl. F26b 3/00
U.S. Cl. 34—9.5 44 Claims



Apparatus and method for uniformly heating and saturating logs or wood "blocks" in one or more tunnels to condition the same to be peeled into veneer. The tunnel has a conveyor for moving blocks therethrough in a single layer, and has steam nozzels above and below the path of travel of the blocks for subjecting the blocks to highly saturated steam while they are in the tunnel. The tunnel is divided into four zones, each having its own independent automatic control system for providing a prescribed heating and saturating treatment. The speed of the conveyor and the heating cycle are co-ordinated with the demand of the cutting lathe for continuous operation. An in-feed conveyor, including a "kicker" device, supplies blocks to a crowder conveyor, which crowds the blocks against each other ahead of the entrance to the tunnel. A transfer conveyor at the tunnel exit receives the treated blocks from a "stop and loader" device, which transfers the blocks from the tunnel conveyor to the transfer conveyor. Another "kicker" device kicks the block off the transfer conveyor onto a lathe in-feed deck to supply a lathe charger. Control means, which may be either manual or automatic, regulates the discharge of blocks from the tunnel and delivery thereof to the charger in-feed deck. Under automatic control, the lathe charger,in positioning a block in the lathe, operates a limit switch that effects the discharge of a block from the tunnel.

3,750,304

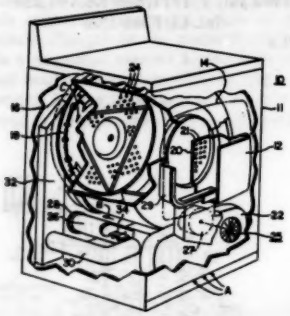
SEMI-RECIRCULATORY SYSTEM FOR A CLOTHES DRYER

Jaffer T. Ghadiali, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1971, Ser. No. 183,434
Int. Cl. F26b 21/00
U.S. Cl. 34—54 7 Claims

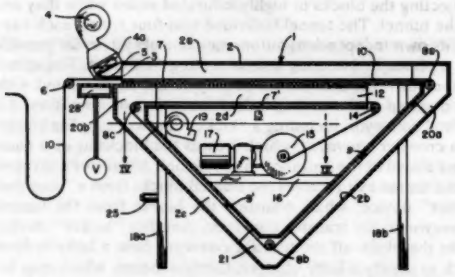
The invention provides a clothes dryer having a diverter means in the exhaust duct so as to provide a recirculation of the exhaust air back through the wet clothes during the early

stages of the drying cycle. After the temperature of the exhaust air has reached a certain upper temperature, the



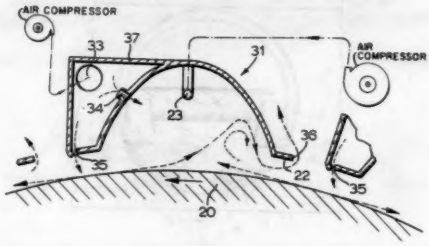
diverter means moves to a non-interfering position permitting the exhaust of air through the exhaust duct of the dryer.

3,750,305
WEB DRYER
Alois Loser, R.D. No. 1, Box 29, Medford, N.J.
Filed Oct. 26, 1971, Ser. No. 192,155
Int. Cl. F26b *13/10*
U.S. Cl. 34—56 **5 Claims**



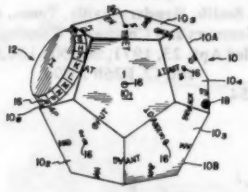
A dryer for webs having freshly applied printed designs and coatings is disclosed. The dryer has an involute conduit formed of a plurality of runs disposed angularly with respect one to the others. The web is drawn through the conduit and exits from the conduit into a central cavity in which is disposed a receiving element for receiving the then dry web. Heated air is introduced into the conduit for drying the web and carrying off the volatile constitutents of the material applied to the web. When the receiving element is a take-up reel, a leader greater in length than the conduit is used to draw the leading edge of the web through the dryer. A photocell sensor determines the presence of a portion of the web to be dried and causes the take-up reel to be driven to draw the web through the dryer.

3,750,306
SONIC DRYING OF WEBS ON ROLLS
Stephen Anthony Rodwin, Montreal, and Gilbert Descary, Lachine, both of Quebec, Canada, assignors to Dominion Engineering Works, Limited, Quebec, Canada
Filed Nov. 3, 1970, Ser. No. 86,571
Claims priority, application Canada, Nov. 7, 1969, 66921
Int. Cl. F26b *19/00*
U.S. Cl. 34—69 **20 Claims**



Sonic drying as applied to conventional dryer rolls involves the provision of stem jet whistles spaced along trough-like reflectors, preferably of eliptic cross-section profile, with provision of low pressure secondary air to sweep displaced moisture clear of the travelling web.

3,750,307
EDUCATIONAL DEVICE
Morton Phillips, 67-70 Yellowstone Blvd., Forest Hills, N.Y., and Robert Kienosky, 75-68 181st Street, Flushing, N.Y.
Filed June 12, 1972, Ser. No. 262,070
Int. Cl. G09b *17/00, 1/36*
U.S. Cl. 35—35 J **3 Claims**

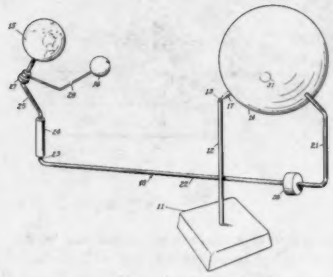


An educational device comprises a polyhedron with each surface of the polyhedron containing printed family sounds extending transversely from the edges of the surface. A wheel, which may be mounted for rotation with respect to any of the surfaces, includes a rim bearing letters which cooperate sequentially with the family sounds extending from the edges of adjacent surfaces when the wheel is turned.

3,750,308
EDUCATIONAL DEMONSTRATION MODEL
Donald E. Nelson, 4105 Schirtzinger Rd., Columbus, Ohio
Filed Feb. 12, 1971, Ser. No. 114,949
Int. Cl. G09b *27/02*
U.S. Cl. 35—45 **1 Claim**

An educational demonstration model for demonstrating the principles of balance, and of the center of gravity, and the principles of the movement of the sun, the revolution of the earth around the sun, and the revolution of the moon around the earth. The device comprises a base with a substantially vertical member secured to and extending upwardly from the base, and with a spherical member balanced on the top of the vertical member and simulating the sun, and with members simulating the earth and the moon connected to the sun and mounted on rods so that they will revolve jointly around the

sun and so that the moon will revolve around the earth. The large sphere is balanced on a point, and the smaller spheres representing the earth and the moon are connected to the sun by a rod so that they are offset from the center of the balance a



distance so that the device may be balanced by means of a weight on the interconnecting rod and the center of gravity principle may be demonstrated. The smallest sphere representing the moon is mounted so that it may be made to revolve around the earth.

3,750,309

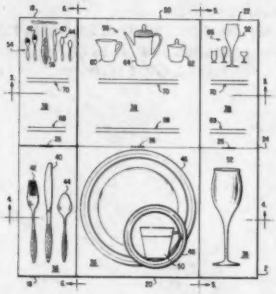
DISPLAY BOOK

Henry M. Tovar, Cheshire, Conn., assignor to Wallace Silversmiths, Inc., Wallingford, Conn.

Filed Feb. 16, 1972, Ser. No. 226,890

Int. Cl. B42d *1/00*

U.S. Cl. 35—53 **3 Claims**



A display book for table settings of preselected patterns of silverware, china, and crystal is presented. The book includes a cover, at least one fly-leaf, and a binding containing three separate sets of independently paged leaves, said leaves adapted to have indicia and illustrations printed on the surfaces thereof, the front surface of each leaf in each of said sets bearing a different illustration of representative pieces of a preselected silverware, china, or sterling pattern on a simulated table background, the reverse surface of each leaf in each section bearing informative information and illustrations of additional representative pieces of the corresponding pattern shown on front surface of the adjacent leaf so that when said book is opened a table setting of silverware, china, and crystal in preselected patterns is displayed for primary emphasis while the reverse surfaces of the adjacent leaf sections display identifying information and illustrations of other representative constituents of said patterns for secondary emphasis in a unitary display.

3,750,310

BOOT, ESPECIALLY SKI BOOT

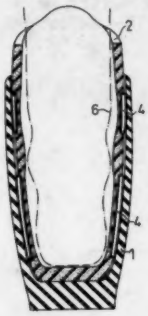
Siegfried Messner, Linsinger Strasse 25, 3000 Hannover; Lothar Depmeyer, Auf der Hochte 30, 3011 Garbsen; Lothar Barth, Eichsfelder Strasse 56, 3000 Hannover-Herrenhausen, all of Germany, and Josef Graup, Klingenweg, 8260 Stein-a-Rhein, Switzerland

Filed Apr. 3, 1972, Ser. No. 240,383

Claims priority, application Germany, Apr. 1, 1971, P 21 15 907.9; Apr. 10, 1971, P 21 17 469.6; Apr. 21, 1971, P 21 19 234.7; Sept. 8, 1971, P 21 44 825.9; Sept. 8, 1971, P 21 44 826.0

Int. Cl. A43b

U.S. Cl. 36—2.5 AL **9 Claims**



A boot, especially ski boot, which comprises a hard-elastic outer shoe with a first step-in opening, and a relatively thick-walled soft-elastic inner shoe arranged within said outer shoe and consisting primarily of cellular polyurethane on the basis of polyester and having a spreadable second step-in opening extending up to the leg area of the inner shoe. Deformable chamber means are provided between the two shoes and are adapted to be filled with a viscous fluid while valve means are associated with the chamber means for selectively closing the same or feeding fluid into or withdrawing fluid from the chamber means.

3,750,311

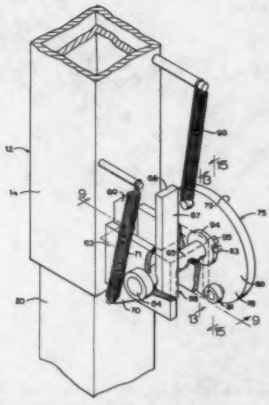
GRAVITY OPERATED MECHANICAL GRAB

Adolph Anderson, 238 S. 39th Ave., West Richland, Wash.

Continuation-in-part of Ser. No. 39,432, May 21, 1970, abandoned. This application Oct. 12, 1971, Ser. No. 187,996

Int. Cl. B66c *3/02*

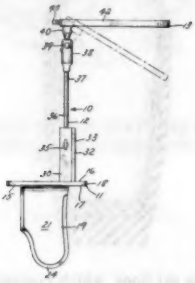
U.S. Cl. 37—188 **3 Claims**



A mechanical grab is described that has two telescopic members, with one attached to a single hoist line and the other

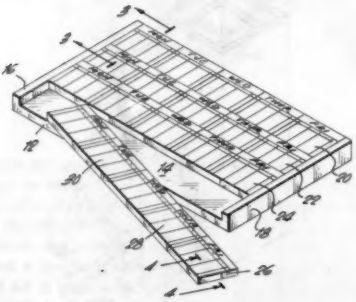
having jaw elements mounted thereon. Linkage interconnects the one member with the jaw elements to automatically open and close the jaw elements as the two telescopic members move in relation to each other when the mechanical grab is lowered and raised from the ground. The mechanical grab has a provision for preventing the jaw elements from closing every other time the mechanical grab is lowered to the ground to prevent the jaws from closing on a just released load and for maintaining the jaws open until the mechanical grab is again lowered to the ground.

3,750,312
LEG-STABILIZED EMBROIDERY HOOP
Joyce L. Bucher, Rt. 2 Box 145, Boqnton, N.J.
Filed June 30, 1972, Ser. No. 268,179
Int. Cl. D05c *1/04*; A47b *23/00*; A41h *31/00*
U.S. Cl. 38—102.2 **3 Claims**



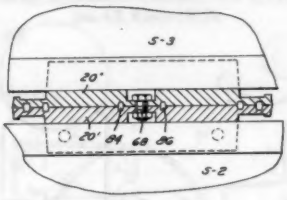
An improved embroidery hoop structure of a type having inner and outer hoops adapted to be placed in concentric relation to clamp a piece of textile work therebetween. The inner hoop is interconnected to one end of a pivotally mounted link supported on a vertically disposed shaft, the lower end of the shaft in turn being supported from an upper surface of a horizontally disposed table. Extending from a lower surface of the table is a vertically oriented stabilizing member or fin adapted to be clamped between the knees of seated user as the lower surface of the table rests upon the lap.

3,750,313
APPOINTMENT BOARD
Peter J. Notaro, 490 McDermott Rd., Rockville Centre, N.Y.
Filed May 26, 1971, Ser. No. 146,897
Int. Cl. G09f *11/30*
U.S. Cl. 40—63 **2 Claims**



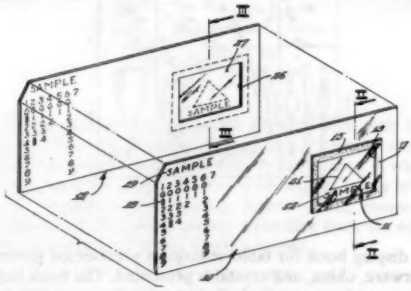
An appointment board for use as a register of appointments or the like comprising a U-shaped frame for carrying a plurality of bars. Detachably secured to the bars are schedule sheets on which appointments or other data can be recorded.

3,750,314
SIGN HOLDER AND ASSEMBLY
John C. Crawford, 15485 Nehls, East Detroit, Mich.
Filed May 12, 1971, Ser. No. 142,664
Int. Cl. G09f *7/20*
U.S. Cl. 40—125 H **1 Claim**



A sign holder and sign assembly is disclosed which includes an elongated member having along one side outwardly opening sign receiving and retaining channel means and along the opposite side provided with a mounting surface for abutting either a support on which the sign is to be mounted or a corresponding surface of an identical holder whereby a pair of signs may be secured together in end-to-end relation, and in which there are a pair of strap engaging surfaces disposed beyond opposite ends of the channel means whereby the holder may be strapped to a support, and in which a fastener receiving aperture extends through the holder intermediate opposite ends for securing the holder either to a support or to an identical holder. The construction of the holder permits a series of signs to be mounted one above the other and disposed in relatively rotated positions such that the signs may be read from different angles of approach.

3,750,315
FILM RECORD CARD SYSTEM
Thomas P. Anderson, Hubbard Woods, Ill., assignor to Microseal Corporation, Skokie, Ill.
Division of Ser. No. 866,306, Oct. 14, 1969, Pat. No. 3,604,779. This application June 1, 1971, Ser. No. 148,422
Int. Cl. G09f *1/10*
U.S. Cl. 40—158 **9 Claims**



An information storage system comprises a diazo reproducible film record card and a receptor or copying card treated with diazo compounds and carrying a strip of blank film also treated with diazo compounds. The reproducible film record card may be of the type adapted to be processed at high speeds by automatic tabulating or sorting machines and may comprise a sheet form card composed of transparentized paper stock having at least one cutout or aperture formed therein for receiving a strip of film containing a micro-image and means for retaining the film within the cutout. The transparentized paper stock has an actinic transmission percentage enabling simultaneous diazo reproduction of both data printed on the card and the micro-image contained on the film. The

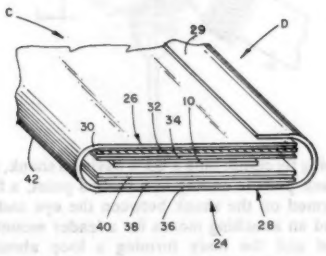
receptor or copying card may include a card capable of being machine processed in automatic sorting machines and has an aperture or cutout located coincidentally with the cutout of the reproducible card and mounts a film having a side or face surface thereof coated with diazo compounds and exposed.

3,750,316

DEVICE FOR SECRETLY OBSERVING VISUAL INTELLIGENCE

Harold N. Braunhut, c/o Honey Toy Industries, Inc., 200 Fifth Ave., New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,422
Int. Cl. G09f 19/14
U.S. Cl. 40—137 **7 Claims**



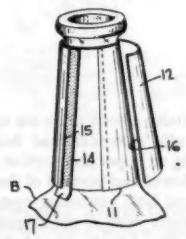
A device for secretly observing visual intelligence. The device comprises a louvered arrangement of transparent and opaque zones extending in alternate succession, the opaque zones acting to permit observation from one direction along one surface of the louvered arrangement, through the transparent zones, of visual intelligence positioned along an opposite surface of the louvered arrangement, yet prevent observation of said visual intelligence from a counter-direction along said one surface.

3,750,317

COMPOUND TEAR LABEL

Anthony J. Morgan, P.O. Box 388, Elmira, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,331
Int. Cl. G09f 3/10
U.S. Cl. 40—310 **2 Claims**



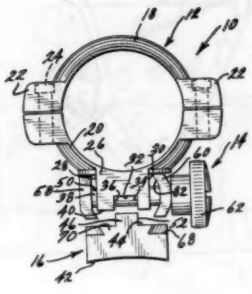
A compound label comprising an outer label having a tear tab disposed about an inner label secured in place about the neck of a bottle, for example, the outer label being removable from the bottle neck to expose the inner label when it is desired to reorder another bottle of the same expended contents.

3,750,318

RIFLESCOPE MOUNT

Donald J. Burris, Aurora, Colo., assignor to Outdoor Sports Industries, Inc., Denver, Colo.

Filed Nov. 8, 1971, Ser. No. 196,533
Int. Cl. F41c 27/00; F41g 1/38
U.S. Cl. 42—1 S **13 Claims**



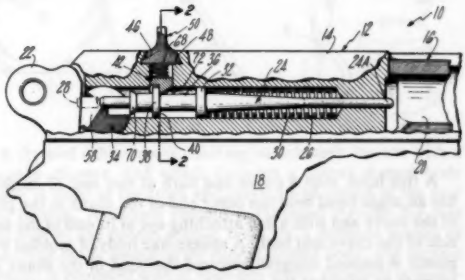
A ring-type dovetail mount for attaching a riflescope to the barrel or receiver of a rifle that includes a base, a split ring that sits atop the base and a clamp subassembly that detachably fastens the two together in assembled relation is disclosed. The base has parallel undercut grooves alongside thereof that produce a dovetail-shaped rail topped by a longitudinally extending recoil rib having a transverse notch therethrough. The split ring is longitudinally grooved to fit down over the recoil rib. The clamp subassembly includes a screw, the shank of which does not rotate but extends across the groove in the split ring and seats within the notch in the recoil rib. The head of this screw defines the fixed shoe of a clamp that engages the undercut groove on one side of the dovetail rail while a movable shoe is drawn against the other by a nut.

3,750,319

FIRING PIN STOP FOR A FIREARM

Robert E. Roy, East Haven, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed Oct. 28, 1971, Ser. No. 193,502
Int. Cl. F41c 17/04
U.S. Cl. 42—70 F **6 Claims**



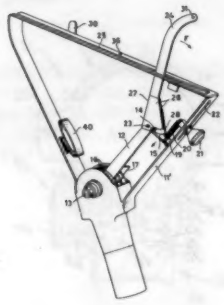
A stop mounted in a frame member and engageable with a firing pin preventing its overtravel, the stop being spring biased toward a normally operative position and releasable for disassembly.

3,750,320

DEVICE FOR AUTOMATICALLY HOOKING A FISH

Napoleone Benedetti, Via Ghittoni 5, Piacenza, Italy

Filed Apr. 13, 1971, Ser. No. 133,585
Claims priority, application Italy, Apr. 15, 1970, 23341 A/70
Int. Cl. A01k 97/00
U.S. Cl. 43—15 7 Claims



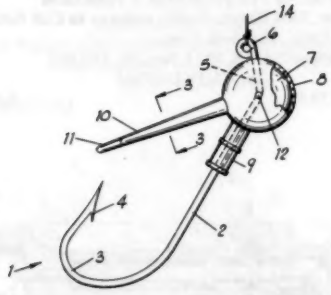
A device for automatically hooking a fish comprising a ground-supported frame with a spring-biased rod pivotally secured at one end to the frame between a rest position and a cocked position. An arm is pivoted to the free end of the rod and a fishing line with a hook thereon is secured to the free end of the arm. The rod and arm are latched in the cocked position and are released from the latch means by a pull on the line, the spring biasing the rod to the rest position to set the hook in the fish's mouth.

3,750,321

ARTIFICIAL LURE FOR FISHING

Bingham A. McClellan, Traverse City, Mich., assignor to McClellan Industries, Inc., Traverse City, Mich.

Filed Apr. 17, 1972, Ser. No. 244,742
Int. Cl. A01k 85/00
U.S. Cl. 43—42.1 1 Claim



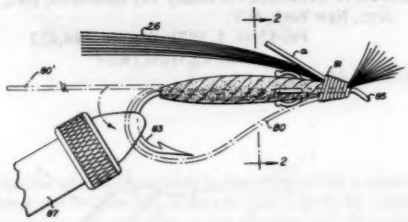
A fish hook with a curve and barb at one end of its shank has an angle bend near the other end of the shank in the plane of the curve and with a line attaching eye at its end of the same side of the curve and barb. A sphere-like body of molded vinyl plastic is formed integrally around the bend in the shank and extends to adjacent the eye. An arm of the same material as the body and molded integrally therewith extends radially of the body to a point spaced laterally outwardly and forwardly of the point of the barb. The arm tapers rearwardly and is springable past the point of the barb. A forked end on the arm has branches that longitudinally overlap the point of the barb.

3,750,322

FISHING FLY WITH SNAGPROOF HOOK

Allen L. Putnam, 311 Santa Barbara Ave., Fullerton, Calif.

Continuation of Ser. No. 24,443, March 16, 1970, abandoned, which is a division of Ser. No. 704,657, Feb. 12, 1968, Pat. No. 3,500,574. This application May 22, 1972, Ser. No. 255,903
Int. Cl. A01k 83/00, 85/08
U.S. Cl. 43—42.25 1 Claim



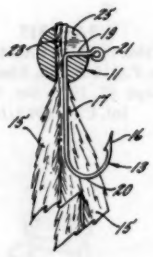
A fishing fly comprising a hook having a shank, an eye and a bent shank portion ending in a barbed point, a fly body and head formed on the shank between the eye and the barbed point and an attaching means for a leader mounted between the head and the body forming a loop about the outer periphery of the bent shank portion to form a "Brush-Off" feature preventing snagging or fouling in weeds, etc.

3,750,323

FISHING JIG

Dan N. Weis, c/o D.N. Weis Enterprises, 3530 Westgate Pky., Rockford, Ill.

Filed June 21, 1971, Ser. No. 154,854
Int. Cl. A01k 85/02
U.S. Cl. 43—42.28 3 Claims



A fishing jig includes a hook upon the upper end of which is mounted a generally spherical lead head surrounding the shank and clamping an upper end portion of a lure body to the shank so that the lower end portion of the lure body conceals the hook. A central hole extending completely through the lead head cooperates with a pie-shaped radial slot which opens through the side of the lead head and into the upper end of the hole to form a passage having internal dimensions sufficient to permit the lead to be passed over the lower end of the hook and be placed upon the upper end of the hook. The upper end portion of the lure body is threaded through the hole alongside the shank of the hook, and the walls of the hole and slot are pinched together to clamp the lead head around the hook and lure body to prevent the resulting jig from coming apart when fishing.

3,750,324
LINE FLOAT HAVING LINE CLAMPING MEANS ACTUABLE BY A PULL ON THE LINE

Arend Verheij, Vinekenbrinckstraat 217, Rotterdam, Netherlands

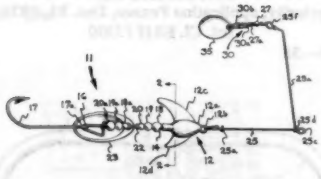
Filed Jan. 19, 1971, Ser. No. 107,634
Claims priority, application Netherlands, Jan. 29, 1970, 7001283
Int. Cl. A01k *93/00*
U.S. Cl. 43—44.88 5 Claims

A float for a fishing line including a line guiding and clamping means thereon. The said means comprises a U-shaped member having one leg rotatable and rectilinearly movable in a bushing fixed on the float with an eyelet on the end of the said leg disposed adjacent one end of the bushing. The other leg of the member is also provided with an eyelet disposed coaxially with the first eyelet, the pair of eyelets guiding the fishing line. A spring biases the member toward the opposite end of the bushing, whereby when the member is rotated by a pull on the line, the spring will move the first eyelet against the end of the bushing to clamp the float on the line.

3,750,325
FISHING LURE

James M. Feltman, 2054 Loxley Rd., Toledo, Ohio

Filed Dec. 7, 1971, Ser. No. 205,637
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.14 8 Claims

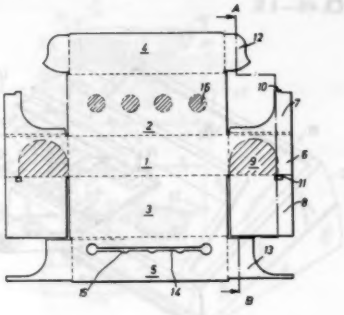


A fishing lure comprising, a serial connection, a relatively stiff axial lead shaft having a keel-weighted principal body member and an upper fin, a spinner blade and a trailing hook, all connected together as to preclude any substantial relative rotation as between the lead shaft body and trailing hook. The lure includes in a preferred embodiment a spinner carried by a wire strut extending vertically up from said principal stiff shaft, said strut carrying a freely spinnable blade, all constructed and arranged with the upper spinner spoon situated generaly vertically above the principal body member.

3,750,326
BAIT BOX FOR RATS AND MICE

Henri Haubtmann, Schiltigheim, France, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 22, 1970, Ser. No. 82,886
Claims priority, application Germany, Apr. 22, 1970, P 20 19 334.4
Int. Cl. A01m *1/20, 25/00*
U.S. Cl. 43—131 8 Claims

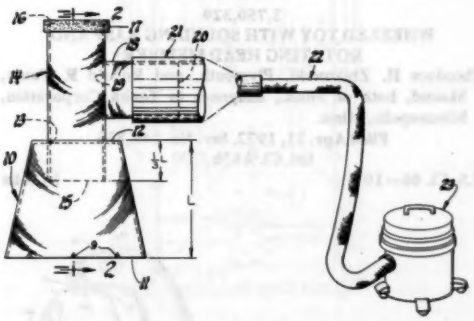


A bait box and a one piece blank which can be set up to form the box. The blank includes side wall sections, upper and lower base wall sections, and end wall sections. Openings are formed in the end wall sections and serve as entrances and exits for the rodents. One side wall includes two side wall sections, one overlying the other and the innermost of the two sections is provided with holes for anchorage of the poison bait, while the outermost of the two sections covers the bait where it projects outwardly from the anchoring holes.

3,750,327
FLY CATCHING ATTACHMENT FOR VACUUM CLEANER

Neil H. Thybault, Highland, Mich., assignor to Chris Nicholas, Clarkston, Mich.

Filed Mar. 13, 1972, Ser. No. 233,916
Int. Cl. A01m *1/06*
U.S. Cl. 43—139 5 Claims



A fly and other insect catching attachment for use with a vacuum cleaner, and which includes a funnel shaped body which is open at the front end thereof and closed at the rear end thereof. A suction conduit is extended through the rear end wall of the funnel shaped body for a distance inward of one-third of the length of the funnel shaped body. The suction conduit is provided with at least one outlet on which is operatively attached a tubular handle that is connected to a vacuum cleaner to produce an intake of air through the front open end of said funnel shaped body to draw insects into said funnel shaped body and thence through said suction conduit and handle and into said vacuum cleaner.

3,750,328

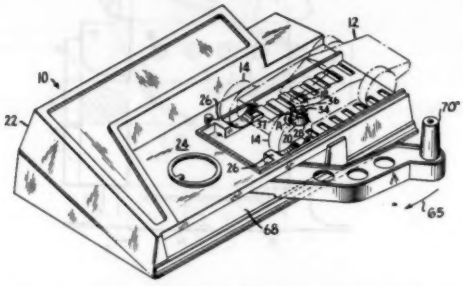
WINDING MECHANISM HAVING PLATFORM FOR SUPPORTING SPRING MOTOR DRIVEN VEHICLE

Edwin A. Nielsen, Oceanside, and Benjamin Stopek, West Hempstead, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Continuation-in-part of Ser. No. 126,817, March 22, 1971. This application Mar. 30, 1972, Ser. No. 239,606

Int. Cl. A63h *33/00, 17/26*

U.S. Cl. 46—1 K **18 Claims**



A wind-up mechanism for a spring-driven toy vehicle includes a housing having a vehicle support platform and a drive clutch rotatably mounted therein for releasably engaging and winding a spring-driven toy vehicle positioned on the platform. The rotatable clutch is driven in a predetermined direction to wind-up the spring driven toy through a first gear rotatably mounted in the housing coaxially of the clutch and operatively connected thereto for transmitting rotational movement to the clutch. A gear segment rotatably mounted in the housing and operatively connected to the first gear is pivotally connected to a winding handle and held in a relatively fixed position with respect to the handle segment by a tension spring which is operatively connected therebetween. The tension spring means permits the handle to pivot with respect to the gear segment when rotation of the clutch in the predetermined winding direction is resisted with a predetermined force by the spring driven toy so that rotation of the gear segment by the handle is stopped to prevent overwinding of the toy vehicle.

3,750,329

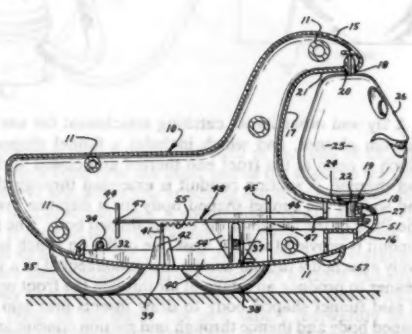
WHEELED TOY WITH SOUNDING RASP AND ROTATING HEAD MEMBER

Theodore H. Zbikowski, Plymouth, and Ronald R. Pauly, Mound, both of Minn., assignors to Tonka Corporation, Minneapolis, Minn.

Filed Apr. 21, 1972, Ser. No. 246,336

Int. Cl. A63h *5/00*

U.S. Cl. 46—107 **1 Claim**



A push-pull wheeled toy having a body mounted on rotary axles carrying ground wheels and with one of the axles having an offset portion, a head journaled on a vertical axis on the front portion of the body, a sound mechanism disposed within the body, and a link within the body connected to said axle offset portion to be moved thereby and connected to the head and sound mechanism to operate the same.

3,750,330

MANIPULATIVE TOY

Jay Smith, III, Pacific Palisades; Gerald W. Schmidt, Woodland Hills, and Lawrence Temple Jones, Pacific Palisades, all of Calif., assignors to California R & D Center, Pacific Palisades, Calif.

Filed Aug. 5, 1971, Ser. No. 169,407

Int. Cl. A63h *11/00*

U.S. Cl. 46—119 **9 Claims**

A manipulative toy is disclosed in which a plurality of flexible coil springs are slidably received within a body. The extremities of each spring extend out of the body and have enlarged objects connected thereto. In the preferred embodiment, the springs are oriented to simulate the limbs and necks of two characters extending out of the main body member. The extremity of each limb or neck has a respective simulated head, hand or foot connected to it. Each spring can be manually moved to slide in and out of the body member. Of particular interest to children is the fact that as one extremity is moved in one direction with respect to the body member, the other extremity of the spring automatically moves in the opposite direction. Moreover, since each spring functions as a flexible cable, the rotary movement of an object on one extremity can be transmitted to the object on the other end of the spring.

3,750,331

MOVABLE BARRIER FOR USE AT THE ENTRANCE TO A PARKING SITE OR THE LIKE

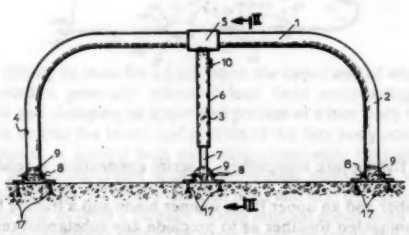
Georges Renaux, Fontenay-sous-Bois, France, assignor to Societe anonyme des Etablissements Trougaunat, Voujours, France

Filed Dec. 29, 1971, Ser. No. 213,634

Claims priority, application France, Dec. 31, 1970, 7047555

Int. Cl. E01f *13/00*

U.S. Cl. 49—35 **4 Claims**

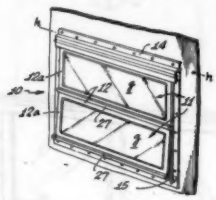


A device forming a movable barrier, for use in particular at the entrance of a parking place, wherein the improvement consists in that said barrier is hinged substantially at ground level in such a way that it can be lowered into an open horizontal position to allow free passage to vehicles over said barrier and can be lifted into and locked in a substantially vertical position to close the access to the parking place.

3,750,332
CLOSURE MECHANISM FOR LOUVER WINDOWS

Richard E. Dulebohn, Boise, Idaho, and Leonard W. Gordon, Palos Verdes Peninsula, Calif., assignors to Elixir Industries, Los Angeles, Calif.

Filed May 5, 1970, Ser. No. 34,725
Int. Cl. E05f 17/00; E06b 7/08
U.S. Cl. 49—74 4 Claims

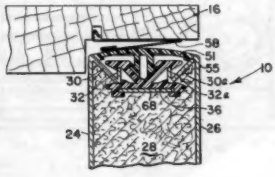


A closure mechanism for louver windows utilizing a reciprocating closure actuation bar and a plurality of elongated springs interconnecting it with the several individually pivoted sections of the window, the springs contributing elastic yieldability between the bar and the window sections by lateral bending, such that the springs for the section or sections which reach closed position first, thereafter undergo lateral bending as subsequent window sections complete their closure movements, and thus do not hang up the actuating mechanism and prevent it from closing the remainder of the sections. The springs are in the nature of elongated resilient elements, such as a wire, capable of yielding readily by lateral bending. In preferred forms of the invention, the resilient element is formed with an initial bend, or angle, to reduce its stiffness and thus improve its proneness to undergo the desired lateral bending action.

3,750,333
INSULATED PRIME DOOR

William R. Vance, Agincourt, Ontario, Canada, assignor to Rusco Industries, Inc., Los Angeles, Calif.

Filed Feb. 28, 1972, Ser. No. 229,975
Int. Cl. E06b 3/16
U.S. Cl. 49—501 9 Claims

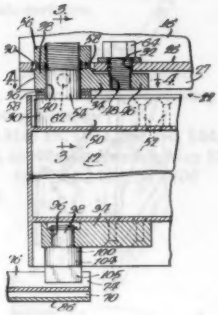


A metal faced door with a foam filled core. An extruded plastic casing member extends around the entire periphery of the door to join the metal facing panels. Direct contact between the inner and outer panels is avoided. The plastic extrusion also carries screw retaining plates usually around the entire periphery of the door.

3,750,334
SLIDING SWINGING DOOR SUSPENSION

Loren E. Slaybaugh, Arlington Heights, Ill., assignor to Republic Industries, Inc., Chicago, Ill.

Filed July 19, 1971, Ser. No. 163,945
Int. Cl. E05d 15/22
U.S. Cl. 49—177 3 Claims

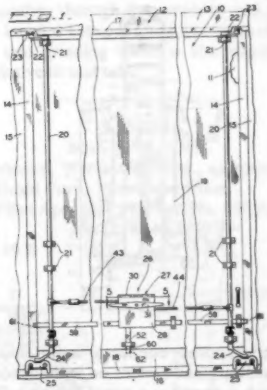


A hinging arrangement for a sliding, swinging door to accommodate the swinging movement thereof including provision to compensate for door sag.

3,750,335
OPERATING MECHANISM FOR PLUG TYPE DOOR

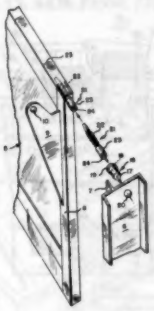
Ronald W. Marsh, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed May 5, 1972, Ser. No. 250,713
Int. Cl. E05d 15/10
U.S. Cl. 49—220 7 Claims



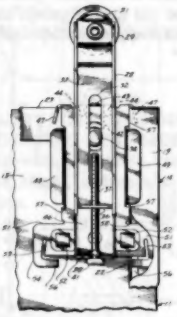
A plug type door having one or more vertically extending shafts and crank mechanisms connected thereto for moving the door laterally from a door opening and a plurality of locking bolts movable into locked engagement with a door frame for securing the door in said door opening includes a pair of cams which are actuated by a camming element disposed between said cams and selectively engageable with said cams for sequentially moving the locking bolts into open and closed positions and for rotating said shafts to effectuate lateral movement of said door.

3,750,336
AWNING WINDOW ASSEMBLY
Philip C. Johnson, South Bend, Ind., assignor to Wells Aluminum Corporation, North Liberty, Ind.
Filed Dec. 29, 1971, Ser. No. 213,550
Int. Cl. E06b 3/40
U.S. Cl. 49—371 3 Claims



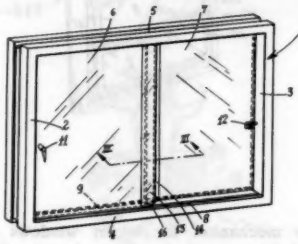
An awning window assembly features a weather-tight window vent pivot support for the side member of the window frame and a pivot mount for connecting the tilting bracket to the tilt bar after the window vent and the tilt bar have been installed in the window assembly.

3,750,337
SLIDING DOOR CORNER CONNECTOR
Robert Brydolf, Pasadena, and Kenneth K. Kellems, Costa Mesa, both of Calif., assignors to Acme General Corporation, Monrovia, Calif.
Filed Apr. 5, 1972, Ser. No. 241,273
Int. Cl. F16b 7/22, 9/00
U.S. Cl. 49—411 24 Claims



This symmetrical corner connector is particularly useful for sliding door hardware and fastens on without screws or other connectors. Such a door has a panel having a G-shaped stile along each side and a U-shaped rail at the top and bottom, all of which engage the edges of the panel to form the structure of the door. The connector has a central channel for receiving a door suspension member and, on each side thereof, has a wing for engaging the back wall of the stile. An ear on each side of the connector near one end fits over the end of the stile to engage the interior thereof. A tang on each side near the opposite end of the connector fits through a slot in the stile and engages it in opposition to both the ear and wing. In addition, the tang has a spring clip for engaging the interior of the stile for preventing withdrawal of the tang. A hook extends over the top of the rail and through a slot to engage the front face of the panel.

3,750,338
OPENING WITH SLIDING LEAF AND ESPECIALLY A GLAZED OPENING
Maurice Lissarrague, Velizy, France, assignor to Boussois Souchon Neuvesel, Paris, France
Continuation of Ser. No. 43,761, June 5, 1970. This application Jan. 10, 1972, Ser. No. 216,848
Claims priority, application France, June 20, 1969, 6920712
Int. Cl. E05d 15/06
U.S. Cl. 49—413 8 Claims

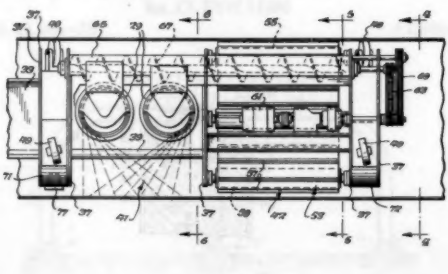


An opening of the type comprising at least one sliding leaf, in particular a panel of transparent or translucent material such as window-glass, plate-glass, or plastic material.

The sliding leaf has at least one flange which is oriented at an oblique angle with respect to the plane of the leaf in the closed position. The flange is applied against a bearing surface of the opening which is oriented accordingly, said bearing surface being formed along the length of the flange and over at least part of the width of said flange.

The flange which is thus attached to the leaf has a contributory role in ensuring leak-tightness of the closure.

3,750,339
PIPE CLEANING APPARATUS
Charles E. Barnes, Williamsport, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Dec. 20, 1971, Ser. No. 209,720
Int. Cl. B24c 3/16, 3/32
U.S. Cl. 51—9 12 Claims

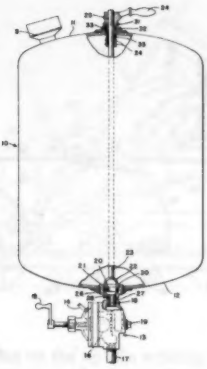


In an apparatus for cleaning the interior of a pipe or like tubular object, a working unit which moves longitudinally through the pipe has a throwing wheel for discharging abrasive particles against the interior surface of the pipe. As the working unit moves through the pipe, the spent abrasive is collected and returned to the throwing wheel for reuse.

3,750,340
AGITATOR ASSEMBLY FOR SAND TANK

Robert Andersen, deceased, late of 1014 Fox Chase Rd., Rockledge, Pa. (Miriam Andersen, executrix)

Filed Sept. 2, 1971, Ser. No. 177,261
Int. Cl. B24c 7/00
U.S. Cl. 51—12 5 Claims

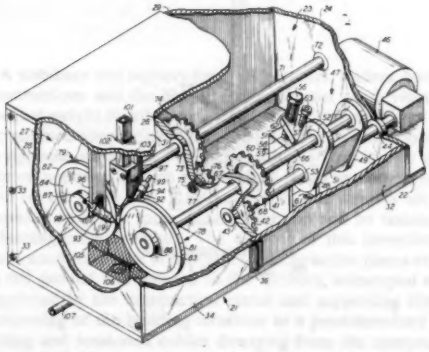


A device to remedy the clogging of sand in the tank of sand blasting equipment. An outlet funnel having an inner cup-like configuration is mounted in a discharge opening at the bottom of the sand tank. It delivers to a flow control device wherein air picks up sand and feeds it to a delivery hose. A cylindrical ring element, secured to the arms of a yoke, nests in the cup-like funnel. The yoke merges above the ring into a central vertical stem, which rises through the body of sand in the storage vessel, and passes through a pressure-tight gland in the top of the tank. A handle on the projecting end of the stem permits free rotation in place, and limited up-and-down movement against resilient packing in the gland, so that the yoke, on agitation, will free clogged sand blocking the outlet.

3,750,341
APPARATUS FOR SELECTIVELY REMOVING MATERIAL FROM AN ARTICLE

Arthur James Matthews, Jr., High Point, and Raymond Otis Terry, Jr., Winston-Salem, both of N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,088
Int. Cl. B24c 3/12
U.S. Cl. 51—8 3 Claims

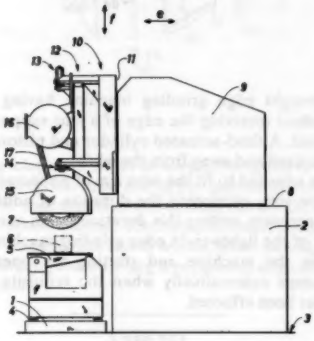


Material is removed from opposite sides of a substrate while protecting intermediate surfaces thereof by employing a pair of wheels biased toward each other to establish peripherial contact. Each of the wheels has a urethane tire bonded thereto and is mounted for rotation in opposite directions to one another. The substrate is engaged between the urethane tires to mask the intermediate surfaces and as the wheels are rotated the substrate is displaced relative to streams of air abrasive particles eminating from each one of a pair of nozzles mounted on either side of the wheels. Material from the opposite sides is removed by the abrasive action of the air abrasive particles while the intermediate sides thereof are protected against the abrasive action by the urethane tires masking the intermediate surfaces.

3,750,342
GRINDING MACHINE

Lars Soderstrom, Centro-Maskin i Goteborg AB, Box 47052, S-400 51 Goteborg, Sweden

Filed May 19, 1971, Ser. No. 144,900
Claims priority, application Sweden, May 12, 1971, 6155/71
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—34 R 4 Claims

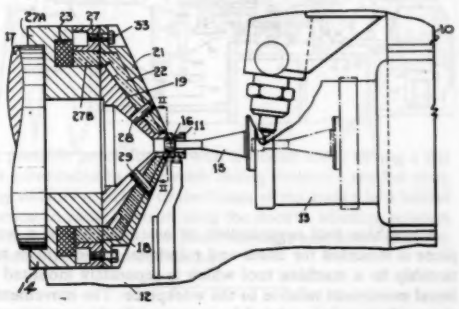


A grinding machine for grinding the upper surface of a workpiece having a reciprocable table for the workpiece and a driven grinding wheel pivotally supported above said table and having a horizontal axis with the axis of pivoting of said grinding wheel extending through the center of said grinding wheel axis and also located between the outer sides of said grinding wheel while said grinding wheel is also capable of vertical movement relative to said table.

3,750,343
MACHINE TOOL

Donald R. Johnson, Worcester, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Apr. 30, 1971, Ser. No. 138,936
Int. Cl. B24b 5/00
U.S. Cl. 51—50 R 4 Claims

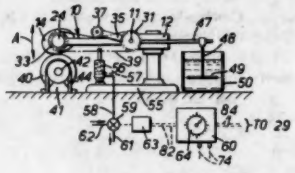


A machine tool having a work driving means consisting of concentric conical shells associated with a coil for generating magnetic lines of flux.

3,750,344
LENS EDGING MACHINE FOR FITTING SPECTACLE LENSES

Osmond Philip Raphael, 52, Clarewood Ct., Seymour Pl., London, England

Filed July 21, 1971, Ser. No. 164,795
Claims priority, application Great Britain, July 22, 1970, 35,444/70
Int. Cl. B24b 9/14
U.S. Cl. 51—97 R 4 Claims



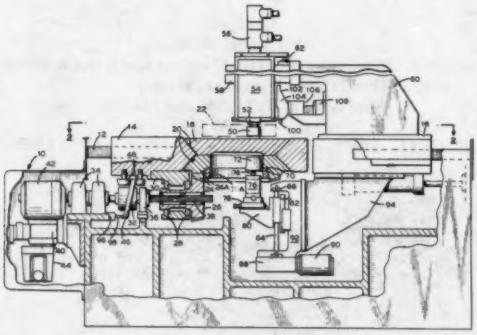
A lightweight edge grinding machine having a grooved grinding wheel receiving the edge of a lens supported upon a pivoted head. A fluid-actuated cylinder and piston unit pivots the head toward and away from the wheel.

A lens is adjusted to fit the wire rim of a spectacle frame by trying it for size, estimating the duration of additional edge grinding necessary, setting this duration on an automatic timing device of the lightweight edge grinding machine, inserting the lens in the machine and starting the operation. The machine stops automatically when the requisite amount of grinding has been effected.

3,750,345
MACHINE TOOL

Daniel J. Kolesar, Troy, and Charles W. Stahl, St. Clair Shores, both of Mich., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Mar. 6, 1972, Ser. No. 231,882
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—101 R 10 Claims

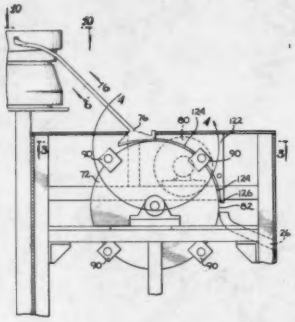


A machine tool organization or assembly where a workpiece is mounted for lineal and rotational movement in relationship to a machine tool which is separately mounted for lineal movement relative to the workpiece. The movement of the workpiece is regulated by a cam while the movement of the machine tool is regulated by a template. The movements of both are coordinated to effect the formation of the workpiece shape to a high accuracy.

3,750,346
AUTOMATIC DEGATING APPARATUS

Louis Beauregard, North Hollywood, Calif., assignor to Techno-Components Corp., Van Nuys, Calif.

Filed Oct. 7, 1971, Ser. No. 187,462
Int. Cl. B24b 5/00, 47/02
U.S. Cl. 51—134 9 Claims

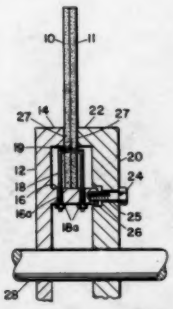


An automatic degating apparatus for removing the gate from molded parts. The apparatus comprises a system for automatically feeding the parts in a prealigned manner to a position adjacent a pickup wheel. The pickup wheel is adapted to receive the molded parts, one at a time, and to carry the parts in a guided manner past a sanding disc disposed so as to remove the gate and then to deposit the part in a finished parts tray. The sanding disc is slightly conical in shape with an axis of rotation annularly offset with respect to the axis of rotation of the pickup wheel so as to present to the parts an initially tapered sanding surface as the parts travel past the sanding disc. The apparatus has various adjustment devices and other features allowing the degating of parts of various sizes.

3,750,347
SEGMENTAL ABRASIVE WHEEL

Roger H. Homeyer, Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed May 30, 1972, Ser. No. 257,502
Int. Cl. B24d 7/06
U.S. Cl. 51—206.5 4 Claims



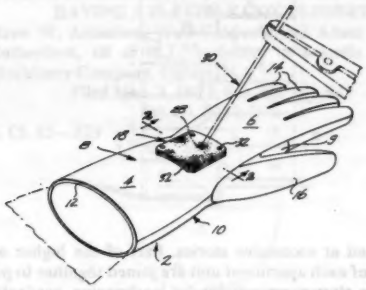
A segmental abrasive wheel comprises a multiple layer of abrasive segments with overlapping joints, the segments being supported in grinding position between two circular flanges and held firmly by internal L-shaped bolts engaging the lower ends of the segments.

3,750,348

MEANS AND TECHNIQUE FOR REMOVING FLUX ON A WELDING ROD

Robert P. Johnson, 7237 S. 129th, Seattle, Wash.

Filed Oct. 20, 1971, Ser. No. 190,761
Int. Cl. B24d *15/04*; B24b *1/00*
U.S. Cl. 51—391 11 Claims



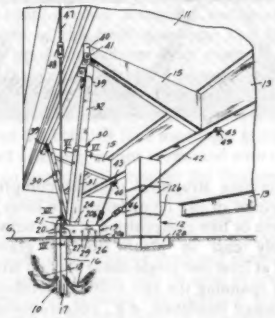
The re-fused flux on the tip of a welding rod, is removed by striking the tip against an abrasive surface defined by a strike-plate on the overside of one of the welder's gloves.

3,750,349

STABILIZER FOR MOBILE HOMES

Robert F. Deike, P.O. Box 4067, Cheyenne, Wyo.

Filed May 15, 1972, Ser. No. 253,231
Int. Cl. F16f *11/00*
U.S. Cl. 52—23 15 Claims



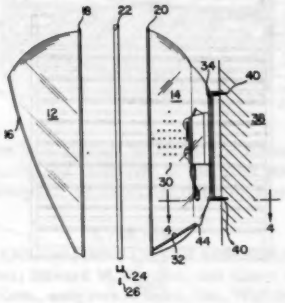
A stabilizer and support for mobile homes, trailers, building constructions and the like effective to resist wind, vibration, unequal weight distributions, and settling. The stabilizers have a combined supporting and tie-down capacity and cooperate on opposite sides of the trailer or building structure so that a tension applying load on one side will result in a compression load on the other side. Angular distribution stresses are also provided so that a force in any direction will be resisted by balancing counter-forces. The devices of this invention include anchors driven in the ground, compaction plates resting on the ground and secured to the anchors, telescoped struts supported by the compaction plates and supporting the underframing of the building structure to a predetermined load setting and tensioned cables diverging from the compaction plates to the frame structure together with tie-down cables or straps anchored to the post carried structure. The struts will shorten or lengthen when the loads thereon exceed the predetermined setting and resist impact loads in the manner of shock absorbers.

3,750,350

HANGING TELEPHONE BOOTH

Modesto Vazquez Anon, 16 Villanueva St., Madrid, Spain

Filed Dec. 13, 1971, Ser. No. 207,064
Claims priority, application Spain, Jan. 21, 1971, 165.419
Int. Cl. E04h *1/14*
U.S. Cl. 52—27 8 Claims



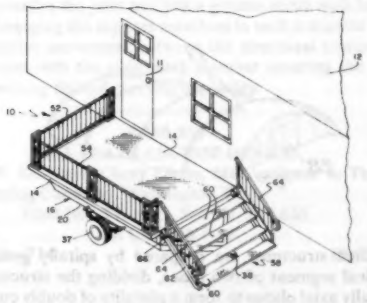
A hanging telephone booth of simple, inexpensive construction for enclosing the head and upper part of the body of the user while the user stands or sits outside the booth, with most of his body outside thereof. The booth includes a shaped front shield and a shaped back shield which, when joined, form the booth by clamping means along a peripheral edge of the front and back shields.

3,750,351

MOBILE HOME PORCH

Jesse J. Greenburg, 506 W. 5th St., Solomon, Kans.

Filed June 8, 1972, Ser. No. 260,739
Int. Cl. B60r *27/00*
U.S. Cl. 52—64 8 Claims

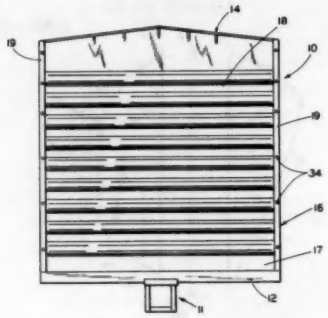


A portable porch for use with a mobile home having a flat deck surrounded by removable railing members, the flat deck being slidably attached to the frame of the trailer in a lateral direction to assist in positioning the deck in abutting relation with the mobile home, the porch having a secondary function as a conventional flat bed trailer.

ERRATUM

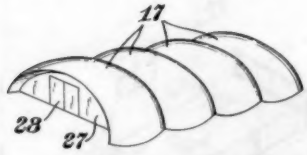
For Class 52—79 T see:
Patent No. 3,750,366

3,750,352
RAILWAY CAR CORNER CONSTRUCTION
Waymond R. Jones, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Jan. 13, 1972, Ser. No. 217,483
Int. Cl. B61d *17/06*
U.S. Cl. 52—282 **7 Claims**



A railway car body includes side sheathing having vertical reinforcing posts on the outer side of such sheathing. The ends of the box car include corner posts of generally channel shaped configuration including longitudinally extending flanges to which the side sheathing is connected. The end construction includes a corrugated end having longitudinally extending flanged portions connected to the webs of the channel shaped corner posts which provide a strong and easily assembled design.

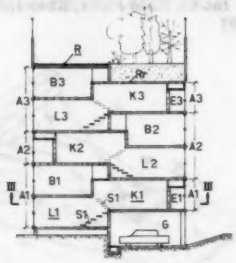
3,750,353
METHOD FOR PRODUCING ARCHED STRUCTURES
Hubert Stacy Smith, Jr., Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 1, 1971, Ser. No. 148,381
Int. Cl. E04b *1/32*
U.S. Cl. 52—745 **5 Claims**



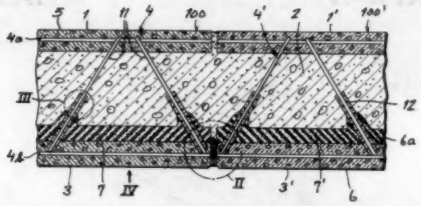
Arched structures are prepared by spirally generating a spherical segment of two bases, dividing the structure along generally axial planes to form a plurality of doubly curved segments. The segments are then assembled into a barrel vault-like structure.

3,750,354
MULTI-STORY BUILDING STRUCTURE
Yedidya Boros, 15 Prinsher St., Rishon Le Zion, Israel
Filed July 12, 1971, Ser. No. 161,778
Int. Cl. E04h *1/04*
U.S. Cl. 52—236 **6 Claims**

A multi-story building structure comprises a plurality of apartment units some or all of which include rooms on the entrance level of the respective unit, on a level lower than the entrance level, and on a level higher than the entrance level. In each such apartment unit, the higher level overlies the lower level, and the entrance level is horizontally laterally of, and vertically spaced between, the lower and higher levels. The entrance level of each unit overlies the higher level of the next lower unit. One or more walls of the building structure are shear walls, the corridor openings of which are horizontally staggered at successive stories. Part of the higher and lower levels of each apartment unit are joined together to provide a double-story room suitable for landscaping, gardening, etc.

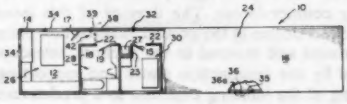


3,750,355
FACADE COMPOSITE PANEL ELEMENT
Eduard Blum, Troisdorf-Oberlar, Germany, assignor to Blum-Bau K G, Troisdorf-Oberlar, Germany
Filed Nov. 3, 1971, Ser. No. 195,123
Claims priority, application Germany, Apr. 28, 1971, P 21 20 746.5
Int. Cl. E04c *1/40*
U.S. Cl. 52—309 **7 Claims**



A facade-forming structural element comprises an outer slab of concrete or of like composition, an inner wall-forming slab of concrete or like composition, a core between the slabs and preferably cast in place from a gravel-containing concrete, and at least one single-shear section lattice-like reinforcing girder spanning the two slabs and embedded therein. A layer of foamed insulation, e.g., polyurethane, is disposed between the core and the facade-forming outer slab.

3,750,356
MOBILE HOME
William L. Morse, P.O. Box 51, W. U.S. 10, Clare, Mich.
Filed Apr. 24, 1972, Ser. No. 246,696
Int. Cl. E06b *3/48*; E05b *65/04*
U.S. Cl. 52—204 **2 Claims**



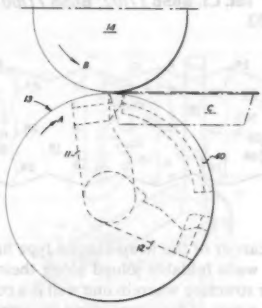
A mobile home including a doorway in the outer wall thereof communicating with a restricted, interior hallway and an outwardly swingable exterior door and an inwardly swingable interior door mounted on said outer wall for closing said

doorway, the interior door including relatively foldable door sections which are precluded from folding when the inner door blocks the doorway but are relatively foldable to overlie one another when the door is swung inwardly.

3,750,357
CRIMPING ASSEMBLY FOR RIMMED CONTAINERS HAVING A FLEXIBLE COVER SHEET

Andrew W. Anderson, West Caldwell, and Adam Szura, Jr., Rutherford, all of N.J., assignors to Scandia Packaging Machinery Company, Clifton, N.J.

Filed Mar. 3, 1972, Ser. No. 231,685
Int. Cl. B65b 7/16
U.S. Cl. 53—329 **13 Claims**



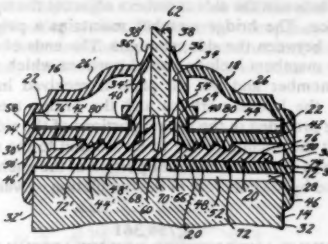
A pair of feed members are rotatably mounted adjacent each other for supporting and feeding a rimmed container having a flexible cover sheet folded over the rim structure thereof. First and second crimping means are movably mounted on one of the feed members. The first crimping means presses the folded cover sheet material beneath the leading rim of the container passing between the rotating feed members. The second crimping means presses the folded cover sheet material beneath the trailing rim of the container passing between the rotating feed members. Movement of the first and second crimping means is effected with respect to the feed member to sequentially engage the flexible cover sheet first below the leading rim of the container and then below the trailing rim of the container. Various types of removable elements are used in conjunction with the crimping assembly so that it may be adapted to various sized and shaped containers. A lateral side crimping means may be used to press the folded cover sheet material beneath the laterally projecting rims which may extend in the direction of movement of the container as it passes between the rotating members.

3,750,358
SELF LOCKING DOOR LIGHT MOLDING

Bernard Lewkowitz, Pleasantville, N.J., assignor to Rimar Manufacturing, Inc., Manheim, Pa.

Filed Sept. 9, 1971, Ser. No. 179,039
Int. Cl. E06b 3/62
U.S. Cl. 52—400 **5 Claims**

A self locking door light molding for use with doors of steel or other construction wherein it is desired to mount glass in a door light opening. The molding incorporates a peripheral exterior frame member and a matching, peripheral interior frame member, the said exterior and interior frame members projecting inwardly about the door light opening for glass holding purposes. Both the interior frame member and exterior frame member include matching facing, locking surfaces of saw tooth configuration which extend about the periphery of the opening. A plurality of horizontal locking members space about the periphery of the door light opening and incorporate saw tooth construction of size and design to cooperate with and lock upon the locking surfaces of the interior and exterior

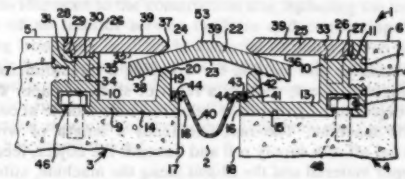


frame members in a manner to secure the frame members together interiorly and exteriorly of the glass insert and to prevent disassembly of the respective frame members.

3,750,359
EXPANSION JOINT COVER ASSEMBLY

Claude P. Balzer; Edward M. Corman, and Almer A. Reiff, all of Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.

Filed June 5, 1972, Ser. No. 259,567
Int. Cl. E04b 1/68; E04c 1/02
U.S. Cl. 52—468 **10 Claims**

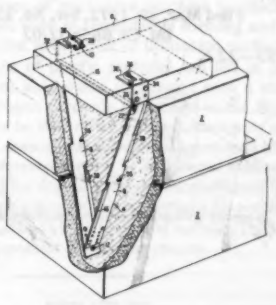


An expansion joint cover assembly for covering an elongate expansion joint between adjacent and spaced apart structural sections. The assembly includes support members mounted on the structural sections with an elongate rigid arcuate plate member engaging the support members. The rigid plate member overlies the joint and has a greater width with lateral portions engaging the support members in such a manner as to permit relative movement between the structural sections in any direction with the rigid plate member covering the joint and maintaining its load carrying capability.

3,750,360
SILL PLATE ANCHOR DEVICE

George W. Kingston, Chevy Chase, Md., assignor to Timber Engineering Company, Washington, D.C.

Filed Dec. 17, 1971, Ser. No. 209,635
Int. Cl. E04b 1/41
U.S. Cl. 52—714 **14 Claims**



An anchor device for securing a wood sill plate on masonry foundation or wall. The anchor device has a pair of side mem-

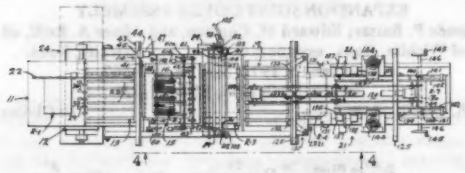
bers which are joined together at the lower end and which are spaced apart at the upper end and the device is substantially V-shaped. The anchor device includes a bridge member which extends between the side members adjacent the upper end of the device. The bridge member maintains a predetermined distance between the side members. The ends of the respective side members include lateral portions which overlap the bridge member and the sill plate is received in the space between the lateral portions and the bridge member. Nail holes are provided in the lateral portions of the side members to permit the anchor device to be secured to the sill plate by nails. When installed, the lower portion of the anchor device is enveloped by the concrete of the foundation or wall.

3,750,361

MACHINE AND METHOD FOR WRAPPING THREE DIMENSIONAL RECTANGULAR OBJECTS

Charles R. Stevens, 4931 Oak Ridge Dr., Toledo, Ohio

Filed Feb. 8, 1971, Ser. No. 113,580
Int. Cl. B65b *11/12, 49/00, 49/08*
U.S. Cl. 53—32 **16 Claims**



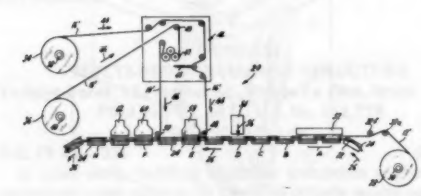
A machine and method for wrapping a three-dimensional, rectangular object, such as a ream or stack of paper sheets. The object to be wrapped is delivered onto a table at one end of the machine. The machine feeds a length of wrapper material off of a supply roll and beneath the object, feeds the wrapper material and the object along the machine, cuts off a proper length of wrapper material to form a wrapper of sufficient size to properly enclose the object and spreads a glue line on the wrapper along one edge thereof. The machine then folds the wrapper around the object to overlap the ends of the wrapper and seals the overlapped ends together to form a girth seam that extends transversely to the direction of movement of the wrapper and object along the machine. After the girth seam is closed, the object and wrapper are then fed in the same direction and between means which apply glue to and then tuck in, fold, and seal, the lateral margins around the sides of the object. The machine and method are particularly adapted for overwrapping stacks of sheets of paper of various sizes and quantities.

3,750,362

METHOD OF PACKAGING GRANULAR MATERIAL

Allan Kishpaugh, and Donald J. Hagen, both of Wayne, N.J., assignors to Standard Packaging Corporation, New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,076
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A **8 Claims**



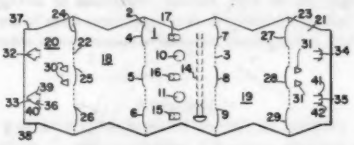
A package for a granular material includes a bottom package member and a top package member. A gas-permeable intermediate package member is disposed between the bottom package member and the top package member to facilitate the evacuation of the package by retaining the granular material in the package during such evacuation. A method is provided for packaging the granular material which includes fully sealing the gas-permeable intermediate package member to the bottom package member and thereafter evacuating the package through the face of the gas-permeable intermediate package member.

3,750,363

ARTICLE CARRIER AND METHOD OF INTERLOCKING A PAIR OF PANELS IN FACE CONTACTING RELATION

Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 811,859, April 1, 1969, Pat. No. 3,570,746. This application Dec. 10, 1970, Ser. No. 96,687
Int. Cl. B65b *17/02;* **B65d** *71/00*
U.S. Cl. 53—32 **3 Claims**



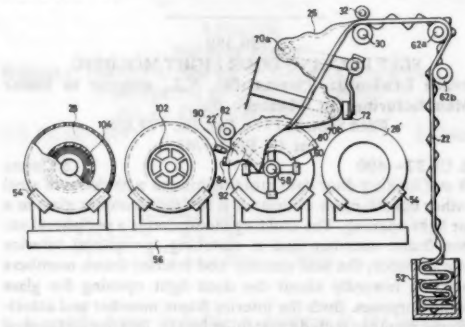
An article carrier of the wrap-around type having top, bottom and side walls foldably joined along their side edges to form a tubular structure wherein one wall is a composite panel incorporating a pair of face contacting lap panels is provided with locking means in the form of a locking tab formed in one of the lap panels which is inserted through an opening defined by a retaining tab formed in the other lap panel and disposed in coincidental relationship with respect to the locking tab. Formation of the lock is facilitated by angularly extending slits formed in the lap panel in which the opening is formed. One end of each slit is in communication with one side of the opening. During formation of the lock the laterally projecting shoulders of the arrowhead type locking tab are received by the slits so as to facilitate the formation of the lock. Upon completion of the lock the lateral projections of the locking tab are out of registry with the slits.

3,750,364

METHOD AND APPARATUS OF WRAPPING FOR ANNULAR GOODS

Isago Miura, 1-4-19, Honcho, Asaka-shi, Saitama-ken, Japan

Continuation-in-part of Ser. No. 113,376, Feb. 8, 1971. This application Nov. 15, 1971, Ser. No. 198,643
Int. Cl. B65b *11/48*
U.S. Cl. 53—13 **9 Claims**



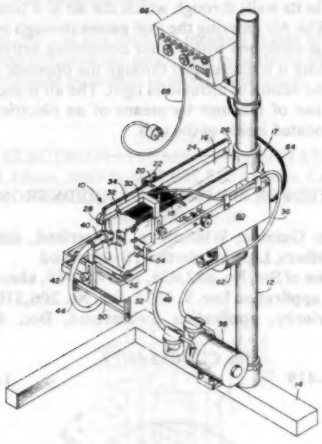
A method and an apparatus are provided for packing or wrapping annular articles automatically. A sheet of ther-

moplastic film tape is stretched in advance to eliminate folds and the outer side of the annular article is wrapped with this sheet in a circumferential direction. Both hems or marginal side edges across the width of the sheet join together at the inside of the annular article, and they are sealed in a ring shaped manner around the inside of the annular article.

3,750,365
METHOD AND APPARATUS FOR OPENING AND SEALING BAGS

Joseph J. Darby, Jr., and Joseph J. Darby, III, both of Dallas, Tex., assignors to The Darby Manufacturing Corporation, Dallas, Tex.

Filed Sept. 10, 1970, Ser. No. 71,010
Int. Cl. B65b *43/30*
U.S. Cl. 53—29 **19 Claims**



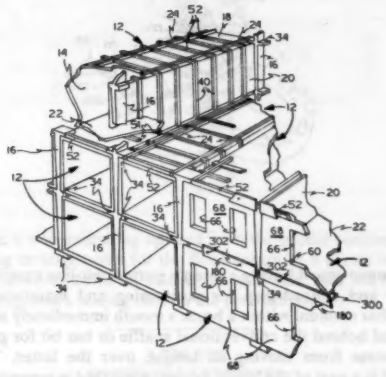
A magazine supports a horizontal stack of collapsed open-top flat bags. A suction head is reciprocable relative to the magazine and vacuum is applied thereto in order to open and remove the end bag from the magazine. The bag is withdrawn from the magazine and maintained in an opened position by the suction head to allow filling of the bag with a suitable material. Vacuum is released from the suction head after the bag is filled such that the filled bag falls by gravity into a gate located below the suction head. A sealing member moves against the top of the filled bag to seal the bag during which the gate opens to drop the filled and sealed bag, upon opening of the sealing member, onto a suitable conveyor.

3,750,366
BUILDING

Frank D. Rich, Jr., Darien, and Alexander D. McDonald, Glenbrook, both of Conn., assignors to F. D. Rich Housing Corp., Stanford, Conn.

Continuation-in-part of Ser. No. 4,156, Jan. 19, 1970, abandoned. This application July 16, 1971, Ser. No. 163,274
Int. Cl. E04h *1/12, 9/06*
U.S. Cl. 52—79 **11 Claims**

A building employing prefabricated room-enclosing modules which function also as box-shaped horizontal beams and ties for connecting vertical weight-supporting columns into a rigid framework. The columns are preferably concrete members which are poured in place into spaces formed between the modules. The inter-module spaces include vertical chases and horizontal plenums which are in communication with each other and with a heating/cooling plant output, to form an air jacket which surrounds each module over a plurality of its exterior surfaces, and operates as an effective radiant heat exchanger therewith. The heated or cooled air is ultimately discharged into the interior occupancy space of the modules, so as to provide a combination radiant and convective heating/cooling system. The interior occupancy space of the modules is sealed during on-site construction, so that no workmen may enter. The interior of the modules is finished

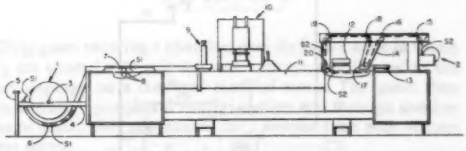


prior to shipment to the construction site, including the installation of all interior service facilities and connecting lines leading from such facilities to a special chamber which is accessible from the exterior of the module. At the construction site workmen can enter this chamber to connect the modules to service risers which extend vertically through a duct formed by vertical alignment of the module chambers, and upper and lower hatchways thereof.

3,750,367
WEB STERILIZING SYSTEM

Charles J. Barker, Atlanta, and John H. Perry, Doraville, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 28, 1972, Ser. No. 238,872
Int. Cl. B65b *9/04*
U.S. Cl. 53—180 **6 Claims**

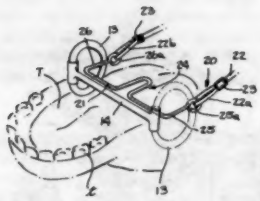


A form-fill-seal type of packaging machine in which a pair of rolls of plastic are used in respectively forming and sealing containers is provided with a pair of utilization tanks through which the two webs of plastic material are fed in order to sterilize the webs or sheets due to contact with a sterilizing liquid such as hydrogen peroxide contained in the two tanks. Should the machine be shut down either deliberately or by inadvertence for any reason, the germicidal agent may affect the plastic material immersed therein in an adverse manner. Thus means are provided for draining the germicidal liquid from the utilization tanks into a reservoir tank thereby to preclude any possible undesired effects by controlling suitable valves in the supply and return conduits or by other means.

ERRATUM

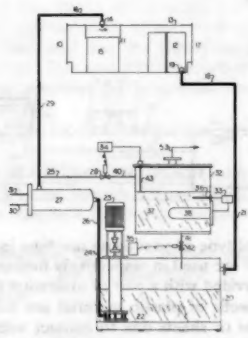
For Class 53—329 see:
Patent No. 3,750,357

3,750,368
TONGUE GUARD FOR HORSES
Thomas J. Hyland, Box 16, Bedford, N.Y.
Filed Dec. 1, 1971, Ser. No. 203,758
Int. Cl. B68b *01/06*
U.S. Cl. 54—8 **9 Claims**



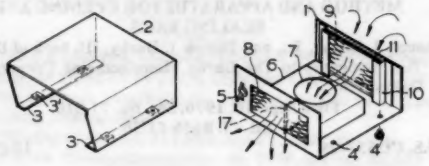
Tongue guard having a deeply ported, bit-like crossbar element and a headstrap for positioning and maintaining the crossbar element within a horse's mouth immediately adjacent to, and behind the conventional snaffle or bar bit for preventing horse from moving its tongue over the latter. Tongue guard is a part of the bridle arrangement, but is separate from, and is positioned independently of all other bridle elements, including the referred to conventional bit for controlling the horse's movement.

3,750,369
SYSTEM FOR CONTROLLING GAS MOISTURE CONTENT
Donald H. Friedland, 3619 Bedford Ave., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 103,595, Jan. 4, 1971, abandoned. This application July 2, 1971, Ser. No. 159,172
Int. Cl. B01d *53/14*, *47/00*
U.S. Cl. 55—20 **11 Claims**



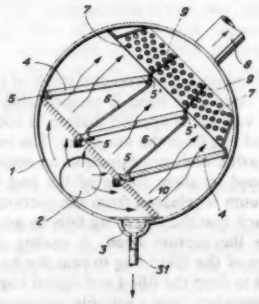
A system for simply controlling the moisture content of gases, such as air, by use of a hydroscopic medium which is subject to regeneration characterized by the combination of (a) means for maintaining constant temperature of the medium in the regeneration zone, (b) a liquid level controller for maintaining constant liquid level in the regeneration zone, and (c) a density controller system sensitive to changes of liquid density of the circulating medium, units (b) and (c) serving to add additional quantities of hydroscopic medium to the regeneration zone upon a drop in liquid level therein, and/or concentration of the circulating medium.

3,750,370
AIR PURIFIER
Erhard Brauss, and Albert Dercho, both of Windsor, Ontario, Canada, assignors to Proto Manufacturing Ltd., Windsor, Ontario, Canada
Filed Dec. 9, 1971, Ser. No. 206,342
Int. Cl. B01d *45/00*
U.S. Cl. 55—279 **3 Claims**



This air purifier consists of a rectangular unit having two opposite grills in its walls through which the air in a room enters and leaves. The Air entering the unit passes through one of the grills which is equipped with a filter containing activated carbon, and before it is discharged through the opposite grill, it is exposed to the action of ultraviolet light. The air is sucked into and forced out of the unit by means of an electrically motorized fan located inside of the unit.

3,750,371
APPARATUS FOR SEPARATING LIQUIDS FROM WET STEAM
Viktor Heinz Gutman, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Continuation of Ser. No. 882,038, Dec. 4, 1969, abandoned. This application Dec. 9, 1971, Ser. No. 206,510
Claims priority, application Switzerland, Dec. 4, 1968, 18071/69
Int. Cl. B01d *46/12*
U.S. Cl. 55—419 **14 Claims**

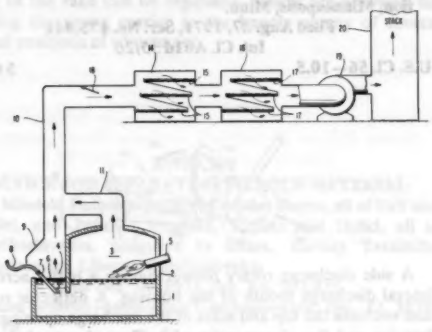


The apparatus includes a grid-like flow straightening means, a pressure reducer in the form of a perforated plate, and a separator for separating out the liquid. A wire mesh screen is also positioned between the pressure reducer plate and separator to provide an equalizing chamber for the steam leaving the plate.

3,750,372
PREVENTION OF AIR POLLUTION BY USING SOLID ADSORBENTS TO REMOVE PARTICULATES OF LESS THAN 0.5 MICRONS IN SIZE FROM FLUE GASES
Lewis A. St. Cyr, Thornton, and Loren H. Young, Northglenn, both of Colo., assignors to Vulcan Materials Company, Birmingham, Ala.
Filed Apr. 1, 1971, Ser. No. 130,398
Int. Cl. B01d *53/04*
U.S. Cl. 55—71 **15 Claims**

Particulates less than 0.5 microns in size are removed from flue gases by passing the flue gases into intimate contact with a

solid adsorbent such as calcium sulfate or zeolite A. Calcium sulfate in its anhydrous and hemihydrate forms is particularly effective in removing metal halide solids, e.g., $AlCl_3$, KCl,



NaCl, and AlF_3, of less than 0.1 microns in size from the gaseous effluent of aluminum processing operations which utilize a gaseous chlorine treatment of molten aluminum.

3,750,373

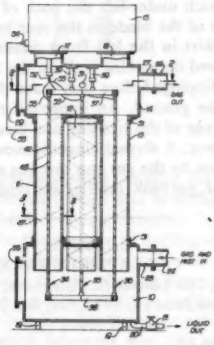
ELECTROSTATIC MIST PRECIPITATOR

Rodney I. Olson, 2080 Balmer Dr., Los Angeles, Calif.

Filed Oct. 1, 1971, Ser. No. 185,726

Int. Cl. B03c *3/06*

U.S. Cl. 55—146 **1 Claim**



An electrostatic precipitator for removing mist from a gas stream. A precipitator formed of electrical insulating material, typically resin impregnated glass fiber. A precipitator with a plurality of tubular flow passages, each having a rod conductor within the tube and another conductor within the tube wall. A helical wire conductor embedded between resin impregnated glass fiber layers to form a tubular flow passage.

3,750,374

GAS FILTERS

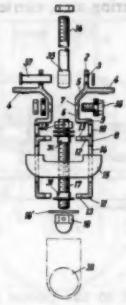
Gerhard Max Neumann, Berlin, Germany, assignor to Delbag-Luftfilter Gesellschaft mit beschrankter Haftung, Berlin, Germany

Filed June 7, 1971, Ser. No. 150,298

Int. Cl. B01d *31/00*

U.S. Cl. 55—484 **5 Claims**

Air filter structure primarily for the ceilings of clean rooms, the structure being formed from a profiled section which can be bolted to a similar structure and hung from the ceiling or supported from a wall each structure being formed to releasably carry a filter, arrangements being provided for filters of different thicknesses, the structure being such that with the filter in place it makes a dust light unit; arrangements may be made for the structure to carry a lighting unit; the structure when bolted to a similar structure may be hung from the ceil-



ing from a web extending upward from the profile section; the releasing arrangements for the filter comprise a clamp which can be screwed down on filters on either side with the filters bearing against a sealing face on the profiled section.

3,750,375

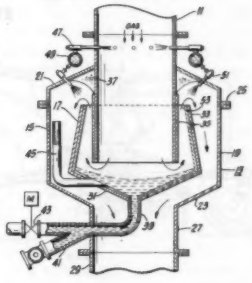
HYDRAULIC VENTURI

Reginald Wintrell, Gibsonia, Pa., assignor to Koppers Company Inc., Pittsburgh, Pa.

Filed May 25, 1971, Ser. No. 146,638

Int. Cl. B01d *47/10*

U.S. Cl. 55—223 **1 Claim**



Dirty gases entering a chamber pass through a zone in which they are treated with primary water sprays, and thereafter the gases impinge on a confined mass of water. The gases then pass through a peripheral venturi section and through another zone in which they are treated for a second time with venturi water sprays.

3,750,376

MOTORIZED LANDSCAPING MACHINE CARRYING ONE OR MORE LANDSCAPING APPLIANCES AND CAPABLE OF AUTOMATICALLY CIRCUMVENTING OBSTACLES

Paolo Cioni, Via dei Bassi 11, Firenze, Italy

Filed Nov. 22, 1971, Ser. No. 201,020

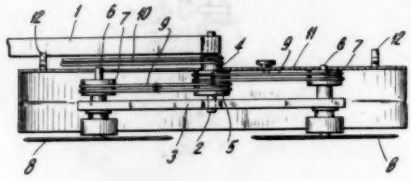
Claims priority, application Italy, Dec. 16, 1970, 9789 A/70

Int. Cl. A01d *35/26*

U.S. Cl. 56—10.4 **8 Claims**

The landscaping machine includes a relatively elongated bearing arm arranged to be secured, at one end, to a motorized vehicle, having a power source, to project laterally from the vehicle, and a relatively elongated yoke is rotatably supported, at substantially its midpoint, on the opposite end of the arm for rotation in a substantially horizontal plane. At least one landscaping appliance is interchangeably mounted

on an end of the yoke, and releasable stop means restrain the yoke to extend substantially parallel to the bearing arm and substantially perpendicular to the direction of movement of the motorized vehicle. A pivot or shaft, swingably supporting the yoke on the bearing arm, carries pulleys, one of which is



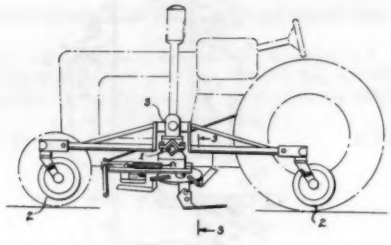
connected by a belt to the power source on the motorized vehicle, and the other of which is connected by belts to pulleys driving the landscaping appliances. When an appliance strikes an obstacle in its path of movement, the releasable lock or restraining means releases the yoke for swinging in a direction to enable the appliance to circumvent the obstacle.

3,750,377

WEED CUTTER

Jerald R. Clark, Maricopa, Ariz., assignor to Farmers Investment Company, Sahuarita, Ariz.

Filed Oct. 4, 1971, Ser. No. 186,297
Int. Cl. A01d *35/26*
U.S. Cl. 56—10.4 **10 Claims**



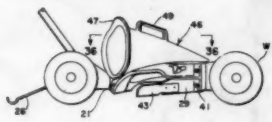
The present invention, attached to a moving vehicle and conveyed through a weed infested orchard, cuts the weeds without causing injury to the tree trunks or tree roots. A horizontally oriented cutting blade, angled at approximately 45° with respect to the direction of travel, rides beneath the surface of the soil cutting the weeds. A plurality of these blades are equi-angularly disposed about a rotatably positionable platform. The platform is angled with respect to horizontal such that only one blade is in contact with the soil at any one position of the platform. A feeler extends forwardly of the platform to detect any trees in the path of the cutting blade. Upon detection of a tree, the feeler trips a release mechanism, which permits the platform to rotate due to the drag of the embedded blade. Rotation of the platform will, because of the angular relationship of the platform, the blades, and the soil, cause the then embedded blade to rotate and rise above the soil. Simultaneously, another of the cutting blades will be rotated until it comes into contact with the soil and embeds itself to resume the weed cutting function. During the rotation of the platform, the position of the tree with respect to the moving platform is such that the aforementioned cutting blades pass on either side of the tree thereby preventing them from inflicting damage to the tree. In this manner, weeds growing between trees in a row of trees may be mechanically cut without causing any injury to the trees.

3,750,378

ROTARY MOWER WITH SAFETY DISCHARGE

Richard A. Thorud, and Kenneth N. Hasenbank, both of Minneapolis, Minn., assignors to Toro Manufacturing Corporation, Minneapolis, Minn.

Filed Aug. 27, 1971, Ser. No. 175,441
Int. Cl. A01d *35/26*
U.S. Cl. 56—10.5 **5 Claims**



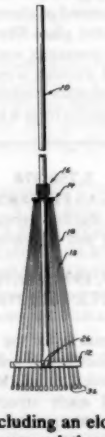
A side discharge rotary mower having a baffle across the lateral discharge mouth of the housing. A deflector overlies and encloses the top and sides of the discharge opening of the housing and the aforementioned baffle and extends laterally outwardly from the housing and the discharge opening. The top of the deflector includes a discharge opening with a hinged spring loaded cover or door therefor, which cover is cooperatively related to a switch. The opening in the deflector is designed for use with a lift-out bag chute to permit optional bagging of the clippings where desired. The switch, which is actuated by the cover and bag chute, is designed to permit the engine to operate whenever the cover is closed or the bag chute is properly installed in the deflector, but is further designed to short and shut off the motor when the cover is raised and the bag chute is not installed therein. The rear half of the housing is provided with a curved, generally horizontal, underguard which under-lies the path of travel of the outer cutting portion of the blade in the rear half of the mower. A smaller underskirt in the left front quadrant prevents blow-out, and a curved depending wall on the top of the deflector disperses the clippings before they leave the deflector and are scattered on the ground. An improved rear safety shield is hinged to the rear of the housing and freely rides on the turf behind the mower. A shroud hingedly mounted on the engine and held in place by the gas cap overlies and protects the engine, carburetor, gas tank, muffler and ignition system.

3,750,379

COLLAPSIBLE RAKE

Fred J. Huspen, 750 Lincoln St., Glenview, Ill.

Filed June 19, 1972, Ser. No. 263,848
Int. Cl. A01d *7/00*
U.S. Cl. 56—400.18 **5 Claims**



An adjustable rake including an elongated handle having a transverse prong guide secured thereto at one end thereof.

Mounted on the handle for slidable movement is a prong carrier and it in turn pivotally mounts respective ends of a plurality of prongs which extend therefrom through the prong guide. By changing the position of the carrier on the handle, the width of swath of the rake can be regulated. Means are provided for securing the prong carrier to the handle at any of several desired positions of adjustment.

3,750,380

DEVICE FOR SEPARATING FIBROUS MATERIAL

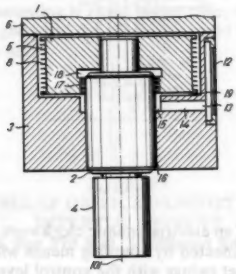
Milos Mladek; Bohumir Burget; Ladislav Bures, all of Usti nad Orlici, and Jaroslav Rajnoha, Tyniste nad Orlici, all of Czechoslovakia, assignors to Elitex, Zavody Textilniho Strojirenstvi, Liberec, Czechoslovakia

Filed Dec. 14, 1971, Ser. No. 207,835

Claims priority, application Czechoslovakia, Dec. 22, 1970, 8660/70

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 **7 Claims**



A device for separating fibrous material, for use with textile machines, and particularly open end spinning machines, includes a housing which defines a chamber. During operation of the device, and for the purpose of doffing separated fibers, an underpressure is maintained in said chamber. A carding roller is located within the chamber and is mounted for rotation by a bearing arrangement, which is itself at least partially located in the chamber. The bearing arrangement has at least one portion from which lubricant may leak and then, under the influence of the prevailing underpressure, be sucked into contact with the fibrous material being separated. To prevent such possibility, a pressure-compensation arrangement is provided which is adapted to prevent the lubricant from coming under the influence of the underpressure.

3,750,381

TEXTILE SPINNING MACHINES

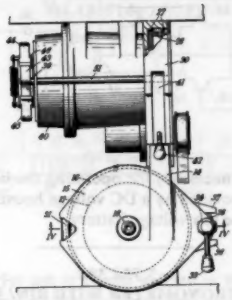
Robert Greenwood, Whalley, near Blackburn, and John M. Shepherd, Ilkley, both of England, assignors to T.M.M. (Research) Limited, Lancashire, England

Filed July 8, 1970, Ser. No. 53,248

Int. Cl. D01h *1/12, 1/24*

U.S. Cl. 57—58.91 **5 Claims**

In an open end spinning machine fibers are passed to the interior fiber-collecting surface of a spinning rotor via a fiber inlet duct provided in a closure member removably secured over the forwardly facing open end of the spinning rotor, a tail end of spun yarn being continuously withdrawn from the rotor via a yarn delivery duct provided in the closure member. Fibers are fed to the fiber inlet duct by an opening roller which



is arranged to the side of the rotor so as not to constitute an obstruction to the ready removal of the closure member from the rotor.

3,750,382

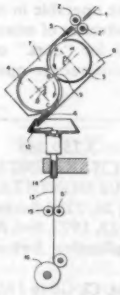
PROCESS AND APPARATUS FOR FEEDING FIBER IN AN OPEN END SPINNING MACHINE

Keiichi Minami; Kozo Susami, both of Otsu, and Masaaki Sakai, Kyoto, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 10, 1972, Ser. No. 233,576

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.91 **7 Claims**



The present invention relates to a process and to an apparatus for feeding fibers in a process for manufacturing spun yarn using the open end system. More particularly, the invention relates to an improvement in a process for separating and feeding a fiber bundle in an open end spinning machine using combing rollers.

3,750,383

QUARTZ-OSCILLATOR CONTROLLED TIMEPIECE USING LIQUID CRYSTAL DISPLAY DEVICE

Kouji Kakizawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,248

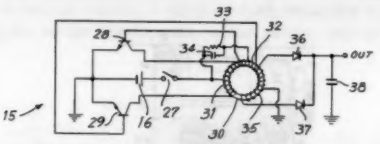
Claims priority, application Japan, Dec. 29, 1970, 45/128117

Int. Cl. G04b *19/30*; G04c *3/00*

U.S. Cl. 58—50 R **10 Claims**

A timepiece which is quartz-oscillator controlled and which displays the time by means of a liquid crystal digital device,

contains a low voltage battery for operating the quartz-oscillator circuit and attendant divider, decoder, and driving circuits.



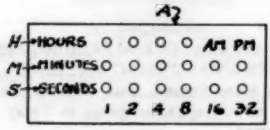
The hig voltage necessary for operating the liquid crystal display device is provided by a DC voltage boosting circuit energized by the same low voltage battery.

3,750,384

ELECTRIC CHRONOMETER WITH BINARY READOUT

Arthur D. Miller, 1042 4th St., Hermosa Beach, Calif., and Robert Verbel, 3666 Cardiff Ave., Los Angeles, Calif.

Filed Aug. 13, 1971, Ser. No. 171,457
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R **7 Claims**



A chronometer provided with three rows of readout lights which indicate seconds, minutes and hours through binary counting of control pulses from an electronic pulse generating system. For setting the readout for correct time, a series of manual overcontrols are operable in conjunction with a start-stop control for rapid advance of minutes and hours counting. Provided, is a control for "dark" operation in which the counting mechanism continues to operate without energizing the readout lights.

3,750,385

CALENDAR WATCH SETTING MECHANISM FOR VARIOUS MONTH LENGTHS

Hans Kocher, Erlenweg 24, 3294 Buren a/Aare, Switzerland

Filed Mar. 13, 1972, Ser. No. 234,288
Claims priority, application Switzerland, Apr. 7, 1971, 5078/71
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **12 Claims**

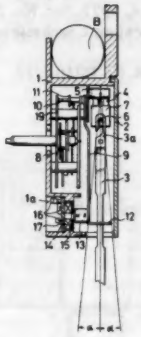
A mechanism for setting the date-indicating indicia on a calendar watch including a date-setting mechanism having an inactive position and at least one first active position, said setting mechanism causing the date-indicating indicia to advance by one step into the first active position immediately after the date-indicating mechanism has been brought to a position corresponding to the date "31."

3,750,386

PENDULUM CONTROLLED ELECTRODYNAMIC CLOCKWORK

Ernst-Heinrich Harting, Gosheim, Germany, assignor to Franz Hermle & Sohn, Uhrenfabrik, Gosheim/Wuertt., Germany

Filed Dec. 16, 1970, Ser. No. 98,768
Claims priority, application Germany, Dec. 17, 1969, P 19 63 259.8
Int. Cl. G04c *3/02*; H02k *33/12*
U.S. Cl. 58—30 **13 Claims**



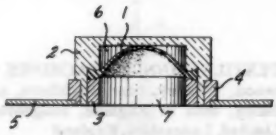
The magnet of an electrodynamic clockwork is secured to a control lever connected by coupling means with a pendulum so that the magnet swings with the control lever and the pendulum to generate pulses in windings for driving the pendulum. The coupling means includes a fork embracing the pendulum and permitting the lower part of the same to assume a vertical position when the housing is displaced. Since the magnet is not carried by the pendulum, but by the control lever, the winding can be secured to the housing near the clockwork.

3,750,387

LEAKAGE INDICATOR FOR EVACUATED AND PRESSURIZED WATCHCASES

Ervin Piquere, deceased, late of Bassecourt, Switzerland; by Ami Scholler, 3, rue Hugi, Bienne, and by Edouard Bandelier, 10, Neubadrain, 4102 Binningen, both of Switzerland (executors)

Continuation-in-part of Ser. No. 42,131, June 1, 1970, abandoned. This application Dec. 10, 1971, Ser. No. 206,834
Int. Cl. G04b *37/02*
U.S. Cl. 58—90 B **28 Claims**

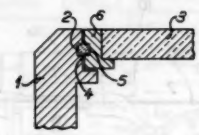


An evacuated or pressurized sealed watchcase comprises a member such as a piston or membrane movable in response to a pressure change in the watchcase, and means for signalling the position of the member so as to enable the detection of leaks.

3,750,388
HERMETIC WATCH CASE

Ervin Piquerez, deceased, late of Bassecourt, Switzerland; by Ami Scholler, Bienne, and by Edouard Bandelier, Binningen, both of Switzerland (executors)

Filed Sept. 15, 1969, Ser. No. 858,083
Claims priority, application Switzerland, Sept. 16, 1968, 13997/68
Int. Cl. G04b 37/08
U.S. Cl. 58—90 R 7 Claims

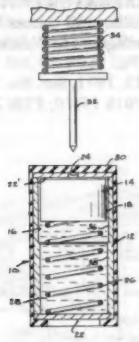


A watch case with a seal between the case and a mounting fitted on the watch glass where the glass can either be swaged or bonded to the mounting or the glass can be provided with a seal between the rim of the glass and the mounting in the same way that the mounting is fitted to the case, in this latter case the rim of the glass and the mounting could be provided with grooves for the seal.

3,750,389
LIQUID ANNULAR ORIFICE DASHPOT TIMER WITH INTERTIAL EFFECTS

David S. Breed, Box 270 R.D. 2, Hillcrest Rd., Boonton Twp., N.J.

Filed Feb. 16, 1971, Ser. No. 115,442
Int. Cl. G04f 1/00
U.S. Cl. 58—144 20 Claims

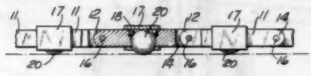


The dashpot of this invention includes the substantially cylindrical cylinder in which travels a piston having a diameter slightly less than that of the interior of the cylinder. A liquid or modified liquid defines the medium in the cylinder in which the piston is adapted to travel. The flow ingenerated in the cylinder is predominantly a pressue flow with the shear flow being relative insignificant. The flow is also at sufficiently high Reynolds numbers such that inertial effects are present. The device of the prsent invention operates in the lubrication regime whereby relatively small timers are capable of providing time delays of up to several seconds or more.

3,750,390
CHAIN LINKS

Floyd F. Edwards, 10831 W. St. Martins Dr., Franklin, Wis.

Filed Mar. 8, 1971, Ser. No. 121,782
Int. Cl. F16g 13/18
U.S. Cl. 59—78 3 Claims

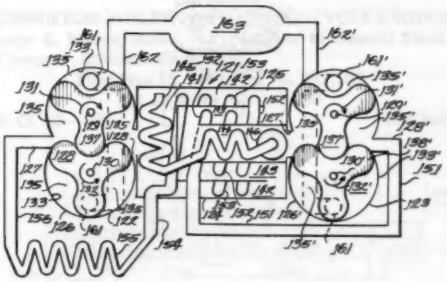


A chain link for use in chains utilized in the operations of cutting or welding relatively large pipe elements by means rotated about the pipe. The link carries a large ball bearing which protrudes from an aperture in the link body to bear against the pipe, and a plurality of relatively smaller bearings concealed within the link body and in contact with the large bearing.

3,750,391
HOT GAS ENGINE

Steven P. Roblyer, 376 E. Montana, Glendale Heights, Ill.

Filed Dec. 9, 1971, Ser. No. 206,246
Int. Cl. F02g 1/04
U.S. Cl. 60—24 12 Claims



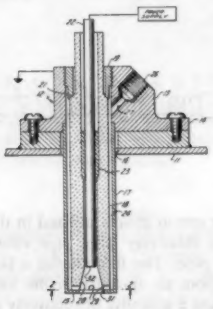
A hot gas engine construction employing either external combustion, internal combustion, or a combination of both internal and external combustion. The engine has a fresh air or gas intake means connected to a casing with a motor connected to the opposite end of the casing, and a chamber in the casing having heat supplied thereto by either heat exchangers or by internal ignition of combustionable fluids thereby effecting the expansion of the gas and the increase of the pressure in the chamber between the intake means and the motor means. This forces the heated gases out of the chamber through the motor effecting the driving of the motor which has its output connected through suitable means to a load to be driven along with being drivingly connected to the intake means for effecting the operation of the same to introduce fresh air or gas into the chamber.

3,750,392

HIGH ENERGY IGNITION DEVICE

August H. Zoll, Cedar Grove, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Dec. 22, 1971, Ser. No. 210,975
Int. Cl. F02c 7/26
U.S. Cl. 60—39.82 S 4 Claims



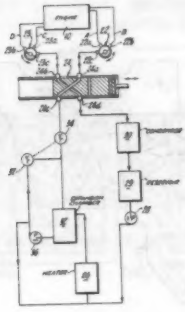
A spark igniter for gas turbine engines, having passage means for positioning a small quantity of liquid fuel directly in the path of the spark, which fuel is vaporized, ignited, and expelled as a jet of flame into the combustion chamber to ignite the main fuel flow.

3,750,393

PRIME MOVER SYSTEM

Wallace L. Minto, and Leonard J. Keller, both of Sarasota, Fla., assignors to Kinetics Corporation, Sarasota, Fla.

Continuation-in-part of Ser. No. 40,623, May 26, 1970, abandoned. This application June 11, 1971, Ser. No. 152,325
Int. Cl. F01k 25/06
U.S. Cl. 60—36 16 Claims



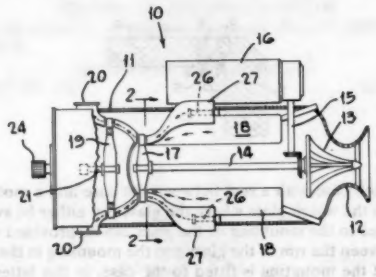
A prime mover system employing in a closed circuit a volatile fluorocarbon drive medium with a low heat of vaporization includes as a vapor engine at least two intermeshing male and female helical screw elements with different numbers of teeth or a pair of eccentric inner and uer gerotor elements housed in a mating casing having inlet and outlet ports communicating with the contract and expanded expansion chambers delineated by the cooperating engine elements. The pressurized inlet vapor is directed to impinge on the chamber-defining grooves in the female screw to use the vapor flow momentum and a plurality of inlet ports afford different cut off points to the engine chambers and hence adjustability of the engine torque characteristics. A valve system permits the feed of the high pressure apor to the exhaust ports to provide engine reversibility. Liquid drive medium mixed with the vapor drive medium is fed to the engine input port and a fluorosilicone lubricant is carried by the drive medium.

3,750,394

STARTER ENGINE

Agnew E. Larsen, deceased, late of Jenkintown, Pa.; by William H. Larsen, executor, Doylestown, and Manuel Weinstock, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1972, Ser. No. 215,294
Int. Cl. F02c 7/26
U.S. Cl. 60—39.14 1 Claim



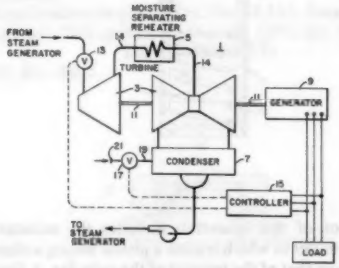
A self-sufficient system for assuring reliable starting of aircraft engines including a plurality of propellant actuated initiators located in parallel arrangement adjacent corresponding jet fuel combustors to lead and direct the products of combustion directly onto the turbine blades of the starter engine for setting the same into motion long enough to enable the jet fuel combustion to take over in the starter.

3,750,395

OVERSPEED PROTECTION SYSTEM FOR A TURBO-GENERATOR UNIT

Donald N. Tapper, Media, and James M. Fieglein, Clifton Heights, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 22, 1971, Ser. No. 191,583
Int. Cl. F01k 19/10; F28f 27/02
U.S. Cl. 60—73 4 Claims

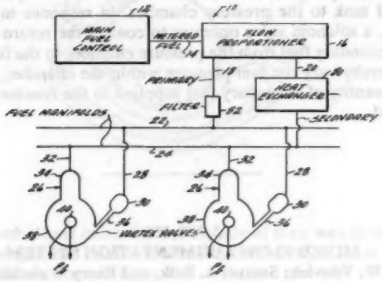


A vacuum breaking valve on a condensing turbine is operable by a controller responsive to losses of load on the generator to admit a pre-determined quantity of air to the condenser to reduce vacuum and the acceleration of the turbo-generator unit upon loss of load by the generator.

3,750,396
VORTEX VALVE FUEL DISTRIBUTION SYSTEM FOR GAS TURBINE ENGINES

Stephen B. Tucker, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 1, 1971, Ser. No. 194,668
Int. Cl. F02c 9/02
U.S. Cl. 60—39.74 R 10 Claims

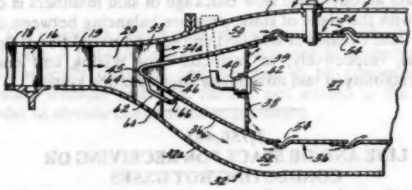


A fuel distribution system for a gas turbine engine includes a plurality of vortex valves to accurately distribute fuel to fuel injection points of the engine. Metered fuel is delivered to a flow proportioner, which divides the metered fuel between two manifolds. Each manifold, in turn, delivers the fuel to either the control inlets or the power inlets of the vortex valves. Dual outlet vortex valves are used to reduce weight and to simplify the system. The outputs of the vortex valves are delivered to fuel injection points of the engine. A fuel-to-air heat exchanger is positioned within the system between the flow proportioner and one of the fuel manifolds.

3,750,397
AREA CONTROL INSERT FOR MAINTAINING AIR FLOW UNIFORMITY AROUND THE COMBUSTOR OF A GAS TURBINE ENGINE

Joseph David Cohen, Danvers; Neil Roger Brookes, Topsfield; Herbert Carl Stark, West Peabody; Robert Hirschkron, Marblehead, and Gerald William Lawson, Boxford, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Mar. 1, 1972, Ser. No. 230,839
Int. Cl. F02c 7/18
U.S. Cl. 60—39.36 1 Claim

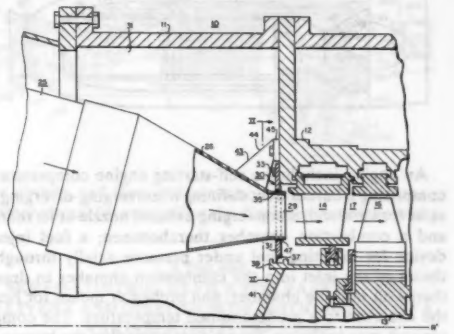


Means for improving flow uniformity and reducing disturbances in compressor discharge air flowing through passages around the combustion chamber of a gas turbine engine are provided by an area control insert. The insert comprises circumferentially and longitudinally extending walls within the forward portions of the air passages to constrict the cross-sectional areas of the passages. Such constriction operates to minimize pressure gradients within the turning and splitting air flow and thereby reduce the tendency for the air flow to separate from the passage walls at random locations around the periphery thereof.

3,750,398
STATIC SEAL STRUCTURE

Richard S. Adelizzi, Marlton, N.J., and James A. Laurelli, Springfield, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1971, Ser. No. 143,774
Int. Cl. F02c 7/20
U.S. Cl. 60—39.37 3 Claims

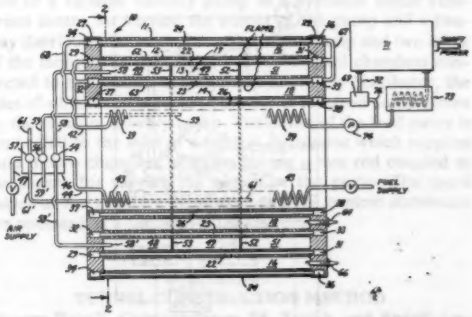


A static seal structure in a gas turbine which prevents leakage of pressurized compressor air from a plenum chamber into the first stage of the turbine around the combustion chambers. The structure comprises two semicircular frame halves, which have openings to receive the combustion chambers. The radially outer portion of the frame is secured to the turbine casing and statically seals around the radially outer portions of the combustion chambers and the radially extending sides between adjacent combustion chambers. The radially inner portion of the frame is secured to an annular seal member which cooperates with an annular seal housing structure to statically seal around the radially inner surfaces of the combustion chambers.

3,750,399
COMBUSTOR-BOILER FOR RANKINE-CYCLE ENGINES

George E. Moore, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 15, 1972, Ser. No. 253,182
Int. Cl. F22b 15/00, 31/00
U.S. Cl. 60—108 10 Claims

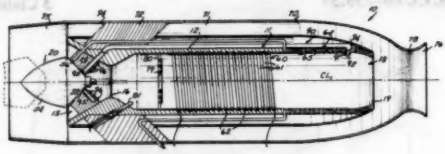


A compact combustor-boiler construction is described that during operation will emit substantially no nitrogen oxides, while burning a fuel/air mixture essentially to completion. Nested cooled porous plug burners with a common fuel/air supply chamber are flanked by inner and outer burned gas cooler units with the coolant flow paths through the burners being connected in series with a flow path through the outer and inner cooler units in sequence whereby the coolant (working fluid) is sequentially exposed to liquid heating, nucleate boiling, film boiling and, preferably, super-heating.

3,750,400
SELF-STARTING AIR FLOW INDUCING REACTION MOTOR

Thomas H. Sharpe, 310 Palmetto Ave., Belvedere, S.C.

Filed Oct. 22, 1971, Ser. No. 191,627
Int. Cl. F02k 3/00
U.S. Cl. 60—269 6 Claims

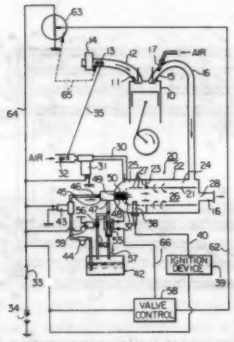


An engine including a self-starting engine compressor unit comprising a burner duct defining a converging-diverging inlet at its forward end, a converging exhaust nozzle at its rear end, and a combustion chamber therebetween; a fuel injection device for injecting fuel under pressure axially through the throat of the inlet into the combustion chmaber to draw air therewith into the chamber; and preheater means for heating the chamber to a predetermined temperature. The compressor unit may include a bypass duct encircling the burner duct with an inlet opening forward of the inlet to the burner duct and a converging exhaust opening rearward of the exhaust nozzle so that air will be drawn through the bypass duct by the jet pumping action of the exhaust gases from the burner duct in combination with the exhaust opening in the bypass duct. The fuel injection device may be equipped with pressure responsive means for transferring the point of injection from forward of the throat of the inlet of the burner duct to a point rearward of the throat and within the combustion chamber. The compressor unit may be embodied in a jet engine as a start stage with intermediate and final ram-jet type stages.

3,750,401
EXHAUST GAS AFTER-BURNING SYSTEM FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Shyuya Nambu, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Dec. 7, 1971, Ser. No. 205,696
Claims priority, application Japan, Dec. 28, 1970, 45/119924
Int. Cl. F01n 3/14
U.S. Cl. 60—286 11 Claims

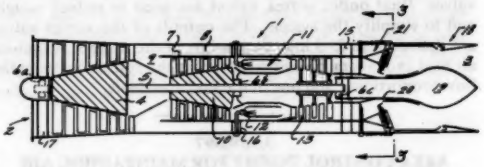


An exhaust gas after-burning system for reducing vehiclular air pollution, which system includes a reactor for re-oxidizing the unburned components of engine exhaust gases, such as hydrocarbons and carbon monoxides. A fuel supply unit is incorporated in the system for supplying secondary fuel in controlled quantities to the reactor. The system also includes an air supply unit for suppying air in controlled quantities to the reactor. The quantities of the secondary fuel and air supplied to the reactor increase with engine loads, the air-fuel ratio of the mixture being kept low, for example, of the order of 20:1 to 50:1. The combustible mixture of the secondary fuel and air is ignited within the reactor by an ignition plug, so that the exhaust's unburned gases are burned completely. The fuel supply unit includes a check valve having a pressure chamber and adapted to be opened to allow the fuel flow from the pressure chamber to the reactor therethrough when the pressure within the pressure chamber exceeds a predetermined value. A fuel pump is provided for delivering the secondary fuel from a fuel tank to the pressure chamber. In response to engine loads, a solenoid valve operates to control the return flow of the secondary fuel from the pressure chamber to the fuel tank to thereby vary the fuel pressure within the chamber, so that the quantity of secondary fuel supplied to the reactor is controlled.

3,750,402
MIXED FLOW AUGMENTATION SYSTEM

John W. Vdoviak; Samuel A. Belk, and Barry Weinstein, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 7, 1963, Ser. No. 300,432
Int. Cl. F02k 3/10
U.S. Cl. 60—261 10 Claims



1. In an axial flow reaction engine a mixed flow augmentation system comprising:

a first plurality of motive fluid flow passages;

a second plurality of motive fluid flow passages, the passages of said first and second pluralities having openings interspersed in circumferential alternation about the axis of the engine; and

a plurality of radially-extending flow blockage members located entirely within the flow passages of said second plurality upstream of the openings thereof, wherein the plane of maximum aerodynamic flow blockage of said members is coplanar with the plane of static pressure balancing between the motive fluid streams of said first and second pluralities of flow passages, respectively, to facilitate flow mixing and combustion stability in said mixed flow augmentation system.

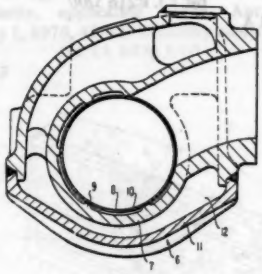
3,750,403
LINE AND/OR SPACE FOR RECEIVING OR CONDUCTING HOT GASES

Herbert Deutschmann, Stuttgart-Bad Cannstatt; Wolfgang Kruczek, Stuttgart, and Karl-Heinz De Lazzer, Waiblingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed July 29, 1970, Ser. No. 59,060
Claims priority, application Germany, July 29, 1969, P 19 38 404.4
Int. Cl. F01r 3/10
U.S. Cl. 60—323 10 Claims

A structure forming lines and/or spaces that are preferably provided with a cooling water jacket and serve for the accommodation and/or conduction of hot gases, and which may be utilized as exhaust gas lines and/or combustion spaces of inter-

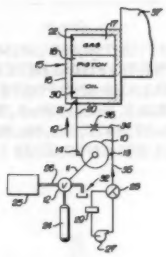
nal combustion engines, particularly of Diesel engines with exhaust gas turbochargers; the lines and/or the spaces are provided with a heat insulation on the side of their wall in contact with the gas; the heat insulation is formed by a sheet metal liner and/or a ceramic layer.



3,750,404
HYDRAULIC FAIL-SAFE VALVE OPERATOR

Fernando Murman, Palos Verdes Peninsula, and Lyle E. Hiatt, Long Beach, both of Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed Jan. 17, 1972, Ser. No. 218,116
Int. Cl. F15b *1/02*
U.S. Cl. 60—413 **12 Claims**



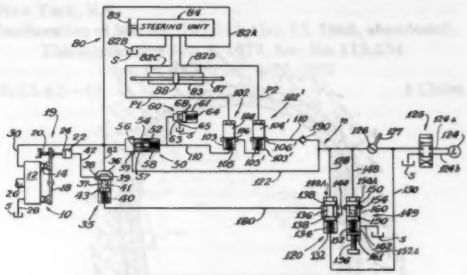
The invention relates generally to the control of sub-surface oil tools. A fail-safe operator for such tools is characterized as hydraulically operated and adapted to be connected in a system wherein hydraulic fluid is not wasted to the sea, in order to obviate contamination problems.

3,750,405
CLOSED CENTER HYDRAULIC SYSTEM

Richard J. Lech, Hickory Hills; Joseph F. Ziskal, Downers Grove; Marvin D. Jennings, Naperville; Harold R. Orth, Hinsdale, and Eugene P. Virtue, Tinley Park, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 16, 1971, Ser. No. 171,933
Int. Cl. F15b *11/16*
U.S. Cl. 60—422 **20 Claims**

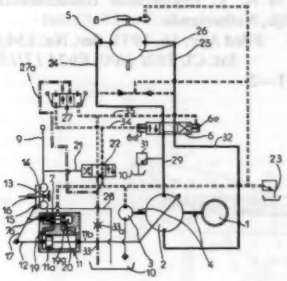
A closed center hydraulic system having a variable displacement pump, two or more motor circuits associated therewith, one circuit being of the proportional demand type, priority means assuring the power requirements of said proportional demand circuit are met prior to permitting power flow to the other circuit, and flow and pressure compensating means in the other circuit for controlling the displacement of the pump.



3,750,406
SERVO-CONTROL DEVICE FOR VARYING THE DELIVERY AND DIRECTION OF DISTRIBUTION OF A VARIABLE DELIVERY PUMP

Auguste Verlinde, Wicres, and Henri Dorot, Saches Thumesnil, both of France, assignors to Verlinde S. A., Nord, France

Filed June 23, 1971, Ser. No. 155,847
Int. Cl. F15b *15/18*
U.S. Cl. 60—442 **12 Claims**



A servo-control device for varying the delivery and distribution of a variable delivery pump to a hydraulic motor comprises means for varying the output of the pump and a two-way distributor between the outlet of the pump and two inlets of the motor. The distributor has two control chambers connected to two outlets of an auxiliary two-way distributor, the inlet of which is connected to the outlet of a feed pump driven by the variable delivery pump. The outlet of the feed pump is connected to the inlet of a control distributor which supplies fluid to two chambers of a ram having a ram rod coupled to the means for varying the output of the pump. The spool valves of the auxiliary distributor and the control distributor are operated by a common actuating lever.

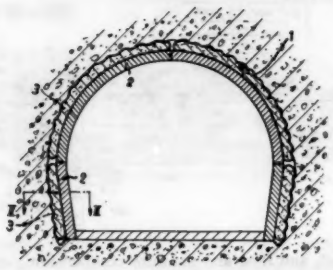
3,750,407
TUNNEL CONSTRUCTION METHOD

Werner Heierli, Culmannstrasse 56, Zurich, and Rudolf Amberg, Churfirstenstrasse 1056, Sargans, both of Switzerland

Filed June 1, 1971, Ser. No. 148,790
Claims priority, application Switzerland, June 12, 1970, 8940/70
Int. Cl. E21d *5/00*; E01g *5/16*
U.S. Cl. 61—42 **8 Claims**

A method of constructing tunnels wherein a tunnel is excavated, braced and lined. The invention contemplates that as excavation of the tunnel proceeds load-carrying internal elements are installed within the tunnel, and expandable body

members are arranged between the tunnel wall and the surfaces of the internal elements confronting the tunnel wall.



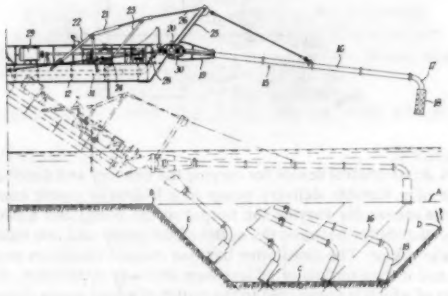
These expandable body members are then brought to bear against the tunnel wall and the internal elements in order to form a pressure- or force-transmitting support.

3,750,408

PROCESS FOR THE CONTINUOUS DREDGING OF INCOHERENT MATERIAL, PARTICULARLY SANDY MATERIAL, WITH A CIRCULAR PATH

Willem Cornelis den Hartog, Kinderdijk, Netherlands, assignor to N. V. Industrieele Handelscombinatie Holland, Kinderijk, Netherlands

Filed Apr. 16, 1971, Ser. No. 134,654
Int. Cl. E02f *1/00*; E02d *17/16*
U.S. Cl. 61—2 **2 Claims**



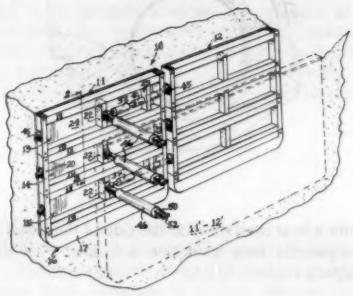
A process for the continuous dredging of incoherent material, particularly sandy material, with a circular path, including the steps of drawing continuously the incoherent material from a zone where it is brought and conveying, also continuously, said material to an erosion zone, to such an amount as to integrate the same erosion. The drawing is carried out progressively in a zone having the shape of an annular ring, the size of which is such, in relationship with the supply of incoherent material, that at the end of a complete turn of the dredging unit, the initial point will be carried again to its initial level. A device is also disclosed for carrying out the process, comprising a drawing pipe, carried by an arm glidingly mounted on a circular guide, for instance a rail located on a landing stage, hydraulic means for turning said drawing pipe about a horizontal shaft, and a pump suitable to cause the water + sand mud to be drawn by said tube and to be conveyed through trunk line, provided with a knuckle joint coincident with the centre of rotation of the arm and connected to a pipe leading to the delivery zone.

3,750,409

SELF-PROPELLED TRENCH-SHORING APPARATUS

Louis A. Orfei, 1818 Lake St., Melrose Park, Ill.

Filed Aug. 8, 1972, Ser. No. 278,730
Int. Cl. E21d *5/00*
U.S. Cl. 61—41 A **8 Claims**



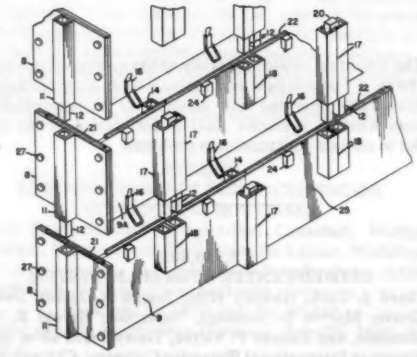
A trench-shoring apparatus having a modular panel construction whereby it may be readily adapted for use for lining trenches or open ground cuts of various depths and widths, with the apparatus being self-propelled by a series of cooperating and related hydraulic cylinders, so arranged and interconnected to different panels of the apparatus as to selectively create holding pressures against the side of the trench while effecting a forward moving thrust between panels.

3,750,410

SIMPLE SHORING TO FORM DITCHES-CANALS-PILLARS AND POSTS

Helena M. Converse, 808 S. Hobart Blvd., Los Angeles, Calif.

Filed Feb. 17, 1970, Ser. No. 886,049
Int. Cl. E21d *5/00*; E02d *5/02*
U.S. Cl. 61—41 A **3 Claims**



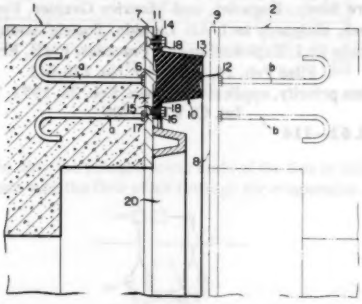
An adjustable trench showing device is disclosed wherein the separable side and endwalls are formed as modules with releasable attaching means whereby the device may be formed of varying lengths vertically and horizontally.

3,750,411

JOINT FOR UNDER-WATER STRUCTURES

Soichiro Shimizu, 7-5, 2-chome, Higashi-Shimbashi, Minato-ku, Tokyo, Japan

Filed Apr. 16, 1971, Ser. No. 134,765
Claims priority, application Japan, Apr. 16, 1970, 45/31975; May 1, 1970, 45/42335 (utility model)
Int. Cl. E01g *3/10*
U.S. Cl. 61—43 7 Claims



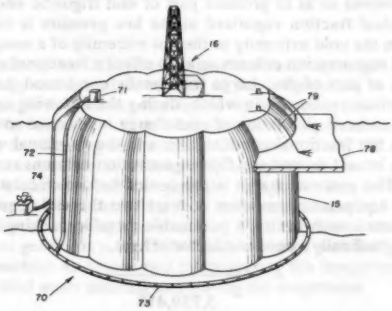
A joint for under-water structures comprising a fixed retaining plate having a projected line extended along the periphery of the end surface of an adjacent under-water structure, onto said end surface thereby fixing the gasket made of elastic material such as rubber onto said retaining plate in such a manner that the middle portion of the end surface of said gasket is against the projected line of said retaining plate; and presses the central projected line and projected lines on both sides formed at the end portion of said gasket onto the end surface of the other adjacent under-water structure.

3,750,412

METHOD OF FORMING AND MAINTAINING OFFSHORE ICE STRUCTURES

John L. Fitch, and Lloyd G. Jones, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,940
Int. Cl. F25c *1/02*
U.S. Cl. 61—46 7 Claims



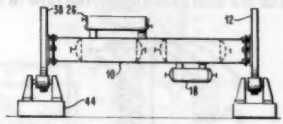
The specification discloses a method of constructing and maintaining an ice structure at a desired, frigid, offshore location which can be used for drilling and/or producing oil wells. An ice floe or a part of a fast ice mass forms the base on which ice is accumulated to form the structure. The ice can be accumulated by spraying, flooding, or piling up of ice. The structure may be reinforced and has means to protect it from marginal melting during the "summer" months.

3,750,413

CRYOGENIC APPARATUS ASSEMBLY METHOD

J. David Milligan, Little Silver, N.J., and Murray Shulman, Brooklyn, N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Continuation of Ser. No. 767,713, Oct. 15, 1968, abandoned.
This application Feb. 5, 1971, Ser. No. 113,034
Int. Cl. F25j *1/00, 5/00, 3/02*
U.S. Cl. 62—42 1 Claim



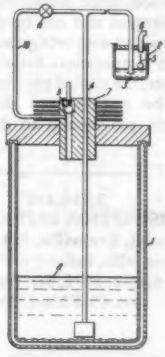
An apparatus for carrying out cryogenic processes wherein the major pieces of equipment, such as fractionating towers, separators, etc., form a central vertical column on which the various pieces of accessory equipment, such as heat exchangers, absorbers, compressors, etc. are both supported and operatively connected.

3,750,414

CRYOGENIC DEVICE FOR COOLING OBJECTS

George Heftman, Hatch End, England, assignor to The Rank Organization Limited, London, England

Filed Sept. 16, 1971, Ser. No. 181,111
Claims priority, application Great Britain, Sept. 16, 1970, 44,106/70
Int. Cl. F17c *7/02*
U.S. Cl. 62—55 3 Claims



A cryogenic device incorporates a liquid storage vessel from near the bottom of which a transfer passage leads to a closed cryogenic chamber having an exhaust passage closable by a liquid level sensitive device in the closed chamber. A heat sink is in heat-exchanging relation with the transfer passage. A bypass pipe in which a shut-off valve is intercalated connects the upper part of the liquid storage vessel to the transfer passage.

3,750,415

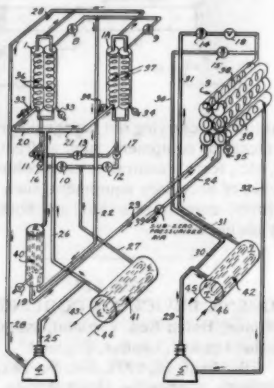
METHOD AND APPARATUS FOR DRYING A GAS AND CHILLING IT TO LOW TEMPERATURES

Wilfred S. Peuchen, Wilmington, and Glenwood K. Pase, Whitehall, both of Del., assignors to Peuchen Inc., Wilmington, Del.

Filed Mar. 1, 1972, Ser. No. 230,752
Int. Cl. F25b *43/00*
U.S. Cl. 62—93 9 Claims

A method and apparatus are provided for continuously drying and chilling a high temperature, pressurized gas such as air

to sub-zero temperatures. The high temperature pressurized gas is passed alternately through each of two parallel heat exchangers containing cooling coils through which cold refrigerant from a refrigeration system is passed. While one of the heat exchangers is being cooled by the cold refrigerant, the hot, pressurized gas is passed through it in heat exchange relationship with the cooling coils. Simultaneously, the other heat exchanger is cleared of moisture and other condensables by passing hot refrigerant gas from the compressor of the refrigeration system through its cooling coils. Before reversing the function of the heat exchangers, the flow of hot refrigerant



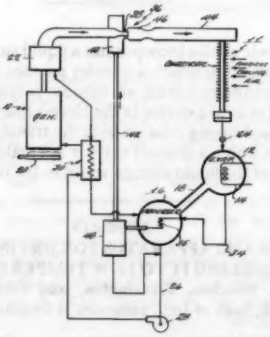
gas to the one being defrosted is terminated and replaced with the flow of cold refrigerant to cool it in order to prevent carryover of moisture on changing stages of operation. A continuous flow of cooled, dried pressurized gas is obtained from the two heat exchangers and can be passed through a third heat exchanger provided with refrigerated coils to further chill the gas to sub-zero temperature. Prior to being passed to the third heat exchanger, the cooled gas from the two parallel heat exchangers can be cycled through a preliminary heat exchanger to effect pre-cooling of the entering hot, pressurized gas.

3,750,416

COOLING OF ABSORPTION REFRIGERATION SYSTEM

Donald Kuhlenschmidt, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Filed Apr. 2, 1971, Ser. No. 130,660
Int. Cl. F25b *15/02*
U.S. Cl. 62—101 **6 Claims**



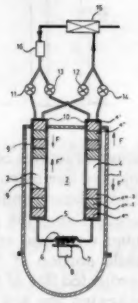
The absorber in a salt solution absorption refrigeration machine is cooled by heat exchange with a stream of refrigerant liquid obtained from the evaporator. The refrigerant vaporizes in absorbing heat and the vapor then passes to an air-cooled condenser by means of an ejector device which employs hot refrigerant vapor flowing from the generator as the driving fluid.

3,750,417

METHOD OF GENERATION OF FRIGORIFIC ENERGY AND A REFRIGERATOR UTILIZING SAID METHOD

Conrad Johannes, deceased, late of Meylan (by Marie Jose Johannes, Administratrix); Emile Carbonell, Grenoble; Pierre Sauty, Bagnolet, and Maurice Grenier, Paris, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes, Paris, France

Filed Feb. 24, 1972, Ser. No. 228,841
Claims priority, application France, Feb. 26, 1971, 7106623
Int. Cl. F25b *1/00*
U.S. Cl. 62—114 **7 Claims**



A method and apparatus for the generation of frigorific energy in accordance with a cycle employing a charge of refrigerant mixture having as its main constituents a plurality of substances which are condensable in the liquid state under the operating conditions of temperature and pressure of said method, in which, during the course of a cycle, said charge is circulated under high pressure from a hot extremity to a cold extremity of a first thermal regeneration column so as to carry out a fractional condensation of said charge, one residual fraction partly in the liquid form, derived from said first regeneration column is expanded to a low pressure, and said fraction is vaporized so as to produce part of said frigorific energy; the residual fraction vaporized at the low pressure is circulated from the cold extremity to the hot extremity of a second thermal regeneration column so as to effect a fractional vaporization of part of the charge fractionally condensed during the previous cycle; and in which, during the following cycle, the direction of circulation of said charge is reversed so as to effect the fractional condensation and the fractional vaporization in said second and first regeneration columns respectively. The gaseous charge is pre-cooled before circulation, and the equipment comprises at least two thermal regeneration columns each having a permeable metallic packing which is longitudinally a poor conductor of heat.

3,750,418

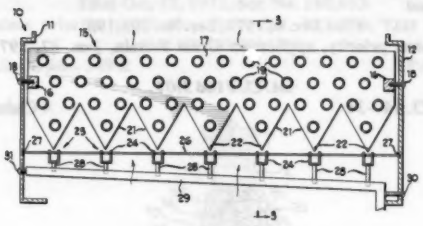
EVAPORATOR AND CONDENSATE COLLECTOR ARRANGEMENT FOR REFRIGERATION APPARATUS

Wendell E. Maudlin, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 20, 1972, Ser. No. 236,048
Int. Cl. F25d *21/14*
U.S. Cl. 62—290 **1 Claim**

A fin and coil type evaporator positionable in a vertically-flowing air stream and including a horizontally disposed plate fin construction with V-shaped fins providing a path for the

flow of moisture, condensed from the air stream, to collectors extending beneath the fins and being of such narrow width as



to underlie only the pointed lower ends of the fins to minimize interference with the flow of air through the evaporator.

3,750,419

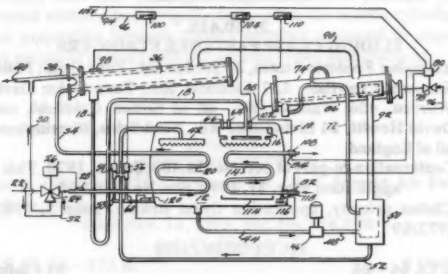
CONTROL CIRCUITS FOR ABSORPTION REFRIGERATION MACHINE

Fred W. Bawel, Boonville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Division of Ser. No. 16,021, March 3, 1970, Pat. No. 3,616,390. This application Aug. 11, 1971, Ser. No. 170,776

Int. Cl. F25b *15/06*

U.S. Cl. 62—141 **5 Claims**



In an absorption refrigerating machine, such as a salt absorption type of machine, control of the temperature in the refrigerant flash chamber is effected by bypassing absorbent around the absorber when the chamber temperature approaches the freezing temperature. Concentration of the salt solution is controlled by withdrawing refrigerant from the circuit into a chamber and dumping the refrigerant into the absorber circuit when there is a drop in the temperature of the cooling water entering the absorber. The heat input to the refrigerant generator is controlled in accordance with the load on the machine as determined by measuring the temperature of the chilled water entering and leaving the evaporator.

3,750,420

REFRIGERATOR INCLUDING AUTOMATIC ICEMAKER AND WATER PUMP DRIVEN THEREBY

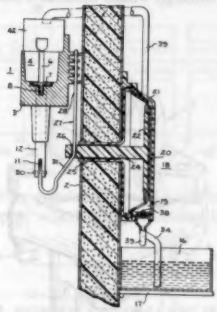
William M. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 17, 1972, Ser. No. 235,609

Int. Cl. F25c *1/04*

U.S. Cl. 62—331 **3 Claims**

A refrigerator including a freezer compartment containing an automatic icemaker and a fresh food compartment containing a water reservoir and a diaphragm pump driven by the



ice ejecting means forming part of the icemaker for transferring measured quantities of water to the icemaker.

3,750,421

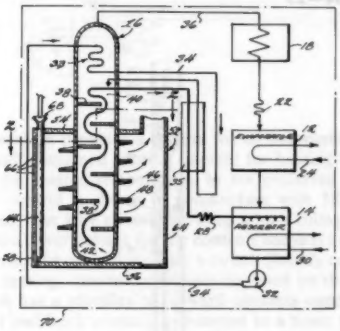
HORIZONTAL FIRING OF GENERATOR IN ABSORPTION REFRIGERATOR

Richard H. Merrick, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Continuation of Ser. No. 813,527, April 4, 1969. This application July 21, 1972, Ser. No. 273,809

Int. Cl. F25b *15/02*

U.S. Cl. 62—476 **3 Claims**



A heat exchanger, such as a vertically disposed cylindrical generator in an absorption refrigeration appliance, is heated by means of a horizontal flow of hot combustion products from a gas burner tube which is disposed parallel to the generator thereby reducing the height of the appliance.

3,750,422

FLEXIBLE TORQUE TRANSMISSION COUPLINGS

Carlo Via, Milan, Italy, assignor to Societa Applicazioni Gomma Antivibranti Saga S.p.A., Milan, Italy

Filed May 30, 1972, Ser. No. 257,611

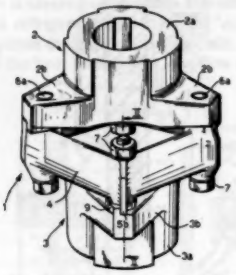
Claims priority, application Italy, Oct. 28, 1971, 30461 A/71

Int. Cl. F16d *3/28*

U.S. Cl. 64—11 R **1 Claim**

This invention relates to resilient couplings of the type comprising a ring assembly of alternate rigid and resilient members clamped between two shaft coupling members adjacent rigid members of the ring assembly being connected to opposite shaft coupling members to provide a flexible torque transmission coupling. The rigid members of the ring assembly have a

tooth which projects towards the shaft coupling member to which it is attached and abuts one side of a ridge which extends tangentially with respect to an annular ridge which surrounds the hole through which extends a bolt to clamp the two



members together. This abutment prevents the rigid member of the ring assembly from rotating during clamping of the bolt so that the adjacent resilient elements of the ring assembly are not distorted during this clamping.

3,750,423

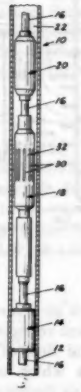
BOREHOLE SHOCK ABSORBER

Robert Carl Williams, Spring, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 28, 1972, Ser. No. 266,879

Int. Cl. F16d *8/00*

U.S. Cl. 64—23 **9 Claims**



Disclosed herein is an improved borehole shock absorber for use between down hole well tools such as between a hydraulic pump and packer to absorb the shock loading created by the pump and, thereby, avoid damage to the packer. The shock absorber includes at least two relatively moveable members, one of which is connected to the packer and one to the pump with a shock absorbing material located therebetween arranged to absorb the shock created by the pump. One of the members is to be provided with a plurality of circumferentially spaced, elongated slots. The slots are located in the member adjacent the rubber so that when the shock absorbing material has been loaded, deformation in the slotted member can occur to permit additional deformation of the rubber and absorb shocks of a magnitude beyond the normal loading.

3,750,424

ROTARY COUPLINGS

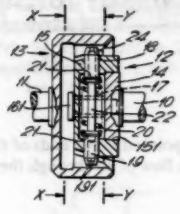
David John Nettleton, South Wigston, Leicestershire, England, assignor to The Rank Organization Limited, London, England

Filed Dec. 6, 1971, Ser. No. 205,198

Claims priority, application Great Britain, Jan. 27, 1971, 3,305/71

Int. Cl. F16d *3/04*

U.S. Cl. 64—31 **4 Claims**



A rotary coupling comprising a male member for attachment to one shaft and a female member for attachment to another shaft, in which one of said members is formed to present at least two slots, parallel to the axis and spaced equidistantly about said one member, towards the other member, the axial edges of each slot being sloped to give it a wedge shape being wider towards said other member, and in which the other member includes two radial drive pins located diametrically opposite each other and biased towards said one member for engagement with the slots, the ends of the drive pins being tapered to mate with the slots.

3,750,425

SLIDING CLASP FASTENER STRINGERS

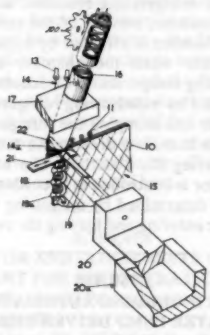
Christopher Frederic Austin, 27 Jordan Rd., Four Oaks; Philip Simpson Crowther, 137 Lichfield Rd., Four Oaks; David Warren, 456 Walmley Rd., all of Sutton Coldfield, and David Howitt, 24 Livingstone Rd., Birchfields, Birmingham, all of England

Continuation-in-part of Ser. No. 52,189, July 6, 1970. This application Mar. 27, 1972, Ser. No. 238,594

Claims priority, application Great Britain, June 3, 1969, 27,972/69

Int. Cl. D04b *23/00*

U.S. Cl. 66—86 **11 Claims**

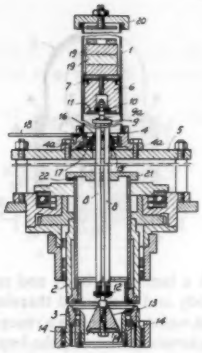


A slide fastener stringer comprising a knitted tape and a series of coupling elements secured thereto by loops of the knitting yarns drawn between successive elements and interlinked with one another.

3,750,426
PUSHING DEVICE IN DOUBLE CYLINDER CIRCULAR KNITTING MACHINES

Francesco Lonati, Via S. Polo 11, Brescia, Italy

Filed Oct. 12, 1971, Ser. No. 188,693
Claims priority, application Italy, Oct. 21, 1970, 7218 A/70
Int. Cl. D04b *15/88*
U.S. Cl. 66—149 R 1 Claim



Pushing device in double-cylinder circular knitting machines, comprising a vertical cylinder, coaxially fixed above the two needle cylinders, a piston slideably mounted within said cylinder, and means for hydraulically feeding said cylinder. A pair of vertical rods, placed at a short distance from each other, are coupled to piston so as to rotate around its axis, said rods passing through respective passages perforated within a body, rigidly fastened to the needle cylinders, and supporting beneath them a member arranged to engage (by means of points) with the articles under manufacture.

3,750,427
KNITTING METHOD

Lee D. Gilchrist, 222 Sidewinder Dr., K. I. Sawyer Air Force Base, Mich.

Filed Nov. 12, 1969, Ser. No. 876,090
Int. Cl. D04b *3/02*
U.S. Cl. 66—172 R 6 Claims

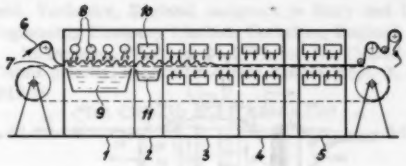
Method of knitting garments by hand is carried out by casting-on the desired number of stitches on one neelde, and thereafter forming the successive rows by knitting through each stitch twice before removing it from the needle, whereby the successive stitches are drawn closely together and the loops formed by each stitch are transverse the plane of the work. A dense, shape-retaining knitted texture is obtained.

3,750,428
APPARATUS FOR WASHING, DRYING AND FIXING A TEXTILE WEB

Kurt Bruckner, Michelstadt, Germany, assignor to Bruckner - Apparatebau Michelsladt GmbH, Erbach Odenwald, Germany

Filed Mar. 29, 1971, Ser. No. 129,027
Claims priority, application Germany, Apr. 2, 1970, P 20 15 752.2
Int. Cl. D06c *1/08*, *3/02*; B05c *9/14*
U.S. Cl. 68—3 SS 15 Claims

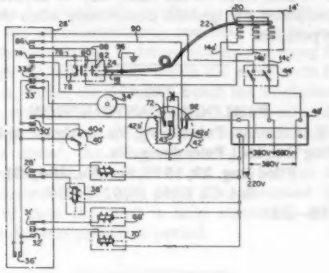
Apparatus for washing, drying and fixing a textile web having endless, driven means for moving a textile web successively through washing, drying and fixing zones and wherein the web is partially dried prior to the drying zone by causing an airstream to pass through the web. Partial drying of the web is facilitated by vibrating the web and means is provided for recovering the washing solvent. Means is provided for condensing or preventing condensation of vaporized washing solvent depending upon whether the washing liquid is cold or hot, respectively.



3,750,429
CONTROL FOR AN AUTOMATIC WASHER

Harold F. Gorsuch, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 26, 1971, Ser. No. 128,369
Int. Cl. D06f *33/02*, *39/04*
U.S. Cl. 68—12 R 3 Claims



This invention provides a control for an automatic washer having a self-contained heating element for heating the wash water to the desired temperature. In the preferred embodiment the control is shown in conjunction with 380v/220v, three-phase, four wire circuit providing a high voltage for the heater and a lower voltage for the controls and drive means of the machine. The control includes a switch directly connected to a heat sensing element intimately disposed on the heater. The switch has a plurality of forward contacts connected to the heater and back contacts connected to a timer motor so that when the heat sensing element indicates heat should be added to the wash water, the forward contacts are closed and the back contacts opened so that the timer does not advance during the period the heater is energized. Further, the controls include two switches centrifugally operated which close when the motor is up to running speed. The switches are connected to the heater so the drive motor must be running before the heater can be energized. The heat sensing element in contact with the heater is grounded so that any electrical leakage from the heater flows through the sensing element causing it to become warm and move the switch to its heater open position thereby deenergizing the heater.

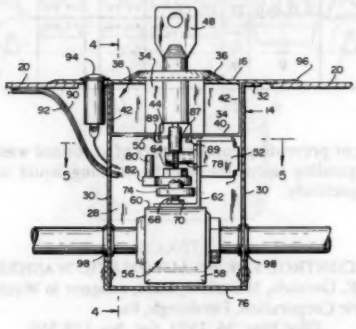
3,750,430
AUTOMOTIVE LOCKING SYSTEM

Anthony Crisa, 7801 34th Ave., Jackson Heights, Queens, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,149
Int. Cl. B60r *25/04*
U.S. Cl. 70—1.5 10 Claims

An ancillary ignition cutout switch and a fuel line valve are carried in a housing secured beneath an automobile floor-

board. The housing includes a cage rendering the switch and valve inaccessible to unauthorized manipulation. A cylinder lock, the key slot of which is accessible from the floorboard is



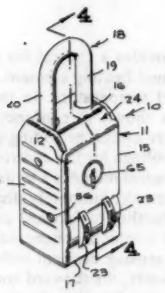
key operable to rotate the valve stem and open or close the fuel line. A cam rides on the valve stem to actuate the switch which completes the ignition circuit only when the valve is in the open position.

3,750,431

PADLOCK CONSTRUCTION

Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed Aug. 29, 1972, Ser. No. 284,581
Int. Cl. E05b *37/02, 67/00*
U.S. Cl. 70—21 **19 Claims**



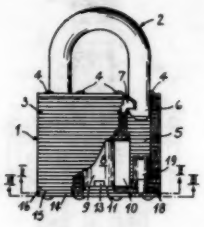
An exposed shackle combination padlock having a padlock body and a U-shaped shackle capable of lateral swinging movement to shift a shackle leg through an arcuate path between locking and unlocking positions. The padlock body includes an outer shell portion and a core portion reciprocatively movable relative to each other. The other shackle leg is journaled in the core portion and the shell portion includes a barrier wall portion normally blocking the shackle in locking position when said shell and core portions occupy a selected registering position and shifted out of such blocking position when said shell and core portions are shifted to a displaced relative position. Combination dial wheel assemblies and a fence member selectively interlock the shell and core portions in the registering position. A key locking mechanism may also be provided in the padlock to make both combination locking and key locking available in the same padlock, or key locking alone.

3,750,432

PADLOCK WITH LAMINATED BODY AND REMOVABLE CYLINDER

Deo Errani, and Roberto Bucci, both of Faenza, Italy, assignors to S.P.A.C.I.S.A. Costruzioni Italione Serrature Affini, Faenza, Italy

Filed Sept. 3, 1971, Ser. No. 177,582
Claims priority, application Italy, June 12, 1971, 3449 A/71
Int. Cl. E05b *67/24*
U.S. Cl. 70—38 R **5 Claims**



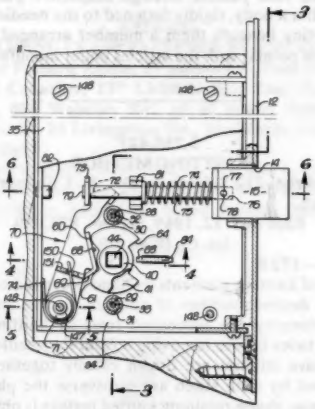
A padlock with a laminated body and removable cylinder housed in said body and restrained therein by fixing means, comprising at least a plate housed in a recess in said laminated body adjacent the laminate defining the key insertion side, the said plate being movable to and fro a locking position.

3,750,433

MORTISE LOCK RETRACT MECHANISM

Vernard W. Sanders, Los Angeles, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed Feb. 7, 1972, Ser. No. 223,866
Int. Cl. E05c *1/16*
U.S. Cl. 70—146 **18 Claims**



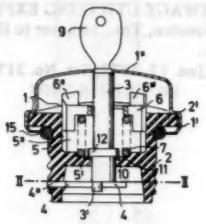
A thin casing adapted to fit in a recess between opposite faces of a door has a front plate mounted flush with the door edge through which extends a reciprocating latch bolt for engagement within an opening of a strike plate mounted upon the adjacent door frame. The latch bolt is spring urged into a normally extended position and is retracted by rotation of either an inside or an outside knob. Rotation of the knobs in either a clockwise or counterclockwise direction is transferred rotating one or the other of a pair of hubs mounted within the casing. Roll backs on the hubs engage a lever, one end of which is coupled to the latch bolt and the other end of which is pivotally mounted on the wall of the case. In one form of the device a lock is provided for blocking rotation of the outside knob, while the inside knob is free to withdraw the latch bolt. Openings in the casing on opposite sides of the hubs accomodate threaded sleeves and screws for fastening the knobs in place.

3,750,434

SCREW CAP WITH LOCK

Theo Gerdes, Langenfeld/Rhld., Germany, assignor to Blau K.G. Fabrik Fuer Kraftfahrzeughteile, Langenfeld/Rhineland, Germany

Filed May 25, 1971, Ser. No. 146,668
Claims priority, application Germany, May 25, 1970, P 20 25 451.7
Int. Cl. B65d 55/14
U.S. Cl. 70—172 8 Claims



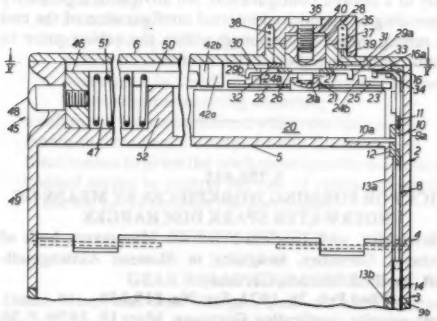
An arrangement of locking bolts for engaging in screw thread or pipe socket parts of cylinder or mortise locks in closure caps and having a removable key, wherein the socket is provided with an inside thread which is partly interrupted, with which a locking bolt engages laterally to secure the cap when the key is turned.

3,750,435

CONTAINER HAVING A TIME CONTROLLED LOCKING MECHANISM

Theo Gerdes, Langenfeld/Rhld., Germany, assignor to Blau K.G. Fabrik Fuer Kraftfahrzeughteile, Langenfeld/Rhineland, Germany

Filed Dec. 15, 1971, Ser. No. 208,365
Claims priority, application Israel, Jan. 5, 1971, 35957
Int. Cl. E05b 43/00, 65/52; A24f 15/12
U.S. Cl. 70—272 14 Claims



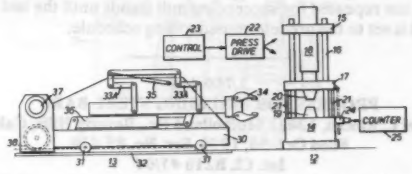
A container such as, for example, a cigarette container having a time controlled locking mechanism whereby the user can only have access to the container contents at predetermined times, the container having a time controlled locking mechanism wherein the tensioning of the mechanism is effected automatically by the user as a consequence of the steps he may take to open the container at the predetermined time.

3,750,436

FORGING CONTROL

Robert Henry Harrison, Sheffield; John Patrick Russell, Unstone, Near Sheffield, and Anthony Edward Middleton, Sheffield, Yorkshire, England, assignors to Davy and United Engineering Company Limited, Yorkshire, England

No Drawing. Filed Aug. 24, 1971, Ser. No. 174,363
Claims priority, application Great Britain, Sept. 3, 1970, 42,219/70
Int. Cl. B21b 37/12; B21d 43/02
U.S. Cl. 72—8 9 Claims



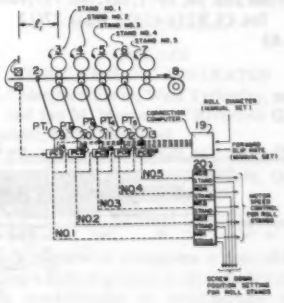
Method and apparatus for forging a workpiece in a series of press squeezes displaced along the length of the workpiece, in which the workpiece is carried by a manipulator peel which can be driven longitudinally relative to the manipulator carriage which has an intermittently operable longitudinal drive, and in which the carriage is driven towards or away from the press through the bite distance within the press cycle time, the peel is driven, during the period in which the workpiece is free of the press, relative to the carriage and in the same direction as the carriage to have a speed relative to ground higher than the carriage speed, the movement of the peel relative to ground is monitored, the drive of the peel in that direction being terminated when the peel has traversed the bite distance, and then the peel is held stationary relative to ground until the next press free period.

3,750,437

METHOD AND APPARATUS FOR CONTROLLING CONTINUOUS TANDEM ROLLING MILLS

Seiji Fujii; Hiroshi Kuwamoto; Masayuki Ishida, all of Fukuyama, and Masamato Kamata, Kawasaki, all of Japan, assignors to Nippon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1971, Ser. No. 119,220
Claims priority, application Japan, Mar. 7, 1970, 45/19212
Int. Cl. B21b 37/14
U.S. Cl. 72—12 8 Claims



In a continuous tandem rolling mill, for varying the gauge of a strip during high speed rolling operation thereof, the number of pulse signals from a pulse transmitter associated with a

deflector roller on the entry side of a plurality of mill stands is counted in response to a signal from a gauge varying point detector disposed on the entry side of the mill, the first mill stand is set to a predetermined rolling schedule when the number of pulse signals counted has reached a predetermined value under the assumption that the gauge varying point reaches the first mill stand, at the same time the counting operation of the number of pulses from a pulse transmitter associated with the roll of the first mill stand is commenced, the second mill stand is set to the predetermined rolling schedule when the counted number of pulses from the last mentioned pulse transmitter reaches the predetermined value, and similar setting operations are repeated for succeeding mill stands until the last mill stand is set to the predetermined rolling schedule.

3,750,438

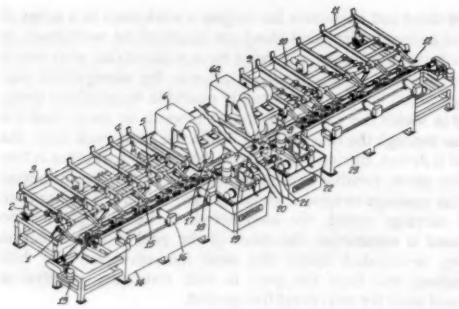
PROCESS FOR FINISHING STEEL BARS

Daniel L. Elman, 12421 Mulholland Dr., Beverly Hills, Calif.

Filed Oct. 30, 1970, Ser. No. 85,420

Int. Cl. B21b *45/04*

U.S. Cl. 72—39 **1 Claim**



The process of the invention comprises a treatment for rough-turned hot-rolled or hot-finish steel bars to provide a defect-free finished product. The process of the invention serves to remove maximum stock from a straightened bar and to finish the surface of the bar in one complete operation from hot-rolled stock. The finished product is completely free from surface defects, and is rust inhibiting and ready for use without the need for any surface machining, or the like.

3,750,439

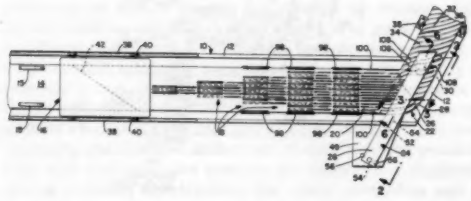
METHOD AND APPARATUS FOR MAKING CORRUGATED PIPE

Howard G. Pratt, Brownsville, Calif., assignor to Eugene W. Sirachenko, Redding, Calif.

Filed Jan. 20, 1971, Ser. No. 107,920

Int. Cl. B21b *45/02*; B21c *37/12*

U.S. Cl. 72—43 **24 Claims**



Corrugated pipe is made from flat strips of corrugated material by helically coiling the strip about the pipe axis. A plurality of laterally spaced ball raceways graze the strip from both sides and helically deform it by rollingly engaging the strip corrugations with the balls as the strip is fed past the raceways. Coiled strip edges are simultaneously seamed. A flying shear intermittently severs the flat strip along a diagonal line for the production of limited length pipe sections having straight ends.

3,750,440

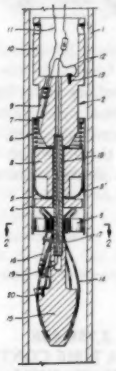
TUBING SWAGE UTILIZING EXPLOSIVES

Paul A. Pausky, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 12, 1972, Ser. No. 217,114

Int. Cl. B21d *26/08*

U.S. Cl. 72—56 **3 Claims**



A system for swaging a flared end of an oil well tubing. A ring of explosive material is placed in an inwardly collapsed condition and transported through the tubing. After the explosive material exits from the flared end of the tubing, it is opened and moved to a position substantially surrounding the flared end of the tubing. The ring of explosive material is detonated, causing the flared end of the tubing to be swaged inwardly to a desired configuration. An anvil with a geometry corresponding to the desired internal configuration of the end of the tubing may be positioned within the tubing prior to detonation of the ring of explosive material.

3,750,441

DEVICE FOR FORMING WORKPIECES BY MEANS OF UNDERWATER SPARK DISCHARGES

Gerd Schneider, and Joachim-Friedrich Mammann, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 26, 1971, Ser. No. 119,158

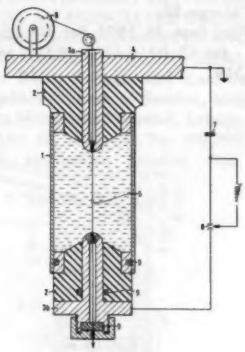
Claims priority, application Germany, Mar. 18, 1970, P 20 12 783.7

Int. Cl. B21d *26/10*

U.S. Cl. 72—56 **3 Claims**

A device for forming workpieces by pressure waves generated in a liquid by an undersurface spark discharge has two electrodes in the liquid and mutually separated so as to define a spark gap. A capacitor battery is connected across the electrodes and an ignitor is suspended between the electrodes

in the spark gaps. The ignitor has a synthetic carrier thread made of thermoplastic and a thin metal ignition wire is em-

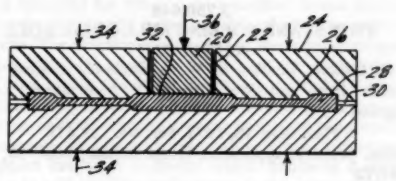


bedded in the surface region of the latter. The ignitor wire has a diameter smaller than the diameter of the thread.

3,750,442
COMPRESSIVE FORMING

Richard Cogan, Hamilton, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 19, 1962, Ser. No. 245,734. The portion of the term of this patent subsequent to Aug. 7, 1984, has been disclaimed.
Int. Cl. B21d *39/08*
U.S. Cl. 72—57 **4 Claims**



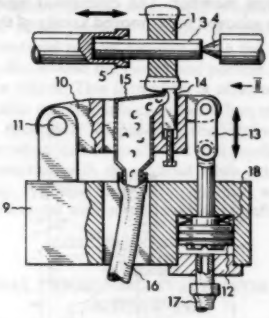
1. Apparatus for the compressive forming of an article comprising:
a die including
a. a die cavity,
b. a workpiece receiving chamber connected with and angularly disposed with the die cavity and
c. port means in a wall of the die cavity and distinct from the workpiece receiving chamber;
a soft metal matrix contained within the die cavity;
means to introduce a workpiece into the die cavity;
force means to press the workpiece into the die cavity; and
control means to control the rate of release of matrix from the die cavity through the port means.

3,750,443
GEAR ROLLING MACHINES

Oskar Maag, and Otto Wenger, both of Zurich, Switzerland, assignors to Maag Gear Wheel & Machine Company Limited, Zurich, Switzerland

Filed Nov. 5, 1971, Ser. No. 195,921
Claims priority, application Germany, Nov. 6, 1970, P 20 54 740.4
Int. Cl. B21h *5/00*
U.S. Cl. 72—72 **3 Claims**

A gear rolling machine has one or more cutting tools mounted in it to remove material upset to the periphery or end faces of a workpiece during the gear rolling operation, the material being removed while the workpiece is still rotatably

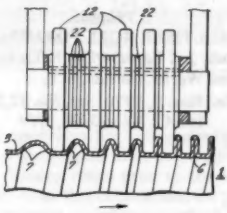


mounted in its location in the machine for the rolling operation.

3,750,444
METHOD OF CONTINUOUS PRODUCTION OF TUBING WITH HELICAL OR ANNULAR RIBS

Herbert Bittner, Krahenwinkel, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Germany

Filed Oct. 13, 1971, Ser. No. 188,752
Claims priority, application Germany, Oct. 29, 1970, P 20 53 085.2
Int. Cl. B21d *15/04*
U.S. Cl. 72—78 **6 Claims**



Method of continuous production of ribbed tubes using a smooth-walled tube, corrugating same, and axially squeezing hollow corrugation crests of the tube, preferably by means of revolving die rollers, so that the interior surface portions of the sides of the crests as facing each other axially are folded and squeezed into surface to surface contact, to obtain integral ribs.

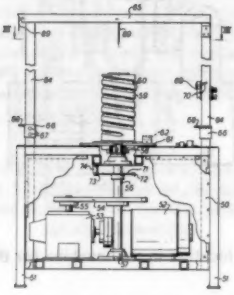
3,750,445
TUBE-COILING APPARATUS

Derek Miles, Colespond Farm, West Tytherley, near Salisbury, Wiltshire, and Ian M. Musson, 61 Riverside Gardens, Romsey, Hampshire, both of England

Filed June 1, 1971, Ser. No. 148,683
Claims priority, application Great Britain, Oct. 13, 1969, 50,252/69; Dec. 12, 1969, 60,759/69
Int. Cl. B21f *3/04*
U.S. Cl. 72—144 **10 Claims**

Tube coiling apparatus comprises a rotatable cylindrical member having a helical groove in its cylindrical surface, the groove being semi-circular in cross-section and equal in diameter to the diameter of the tube to be coiled. A roller has a groove therein of a cross-section corresponding to the cross-section of the groove in the cylindrical member and is mounted adjacent the groove in the cylindrical member for rotation about an axis offset from the axis of the cylindrical

member by the helix angle of the groove in the cylindrical member. One end of a length of tube to be coiled is inserted between the roller and the cylindrical member and is secured to the cylindrical member. The cylindrical member is then rotated and the grooved roller moved axially of the cylindrical



member to wind the tube into the groove in the cylindrical member and thus into a helical coil. The grooved roller may be moved axially of the cylindrical member by a lead screw or by mounting it in a yoke which also mounts rollers having convex peripheral surfaces engaged in the groove in the cylindrical member.

3,750,446

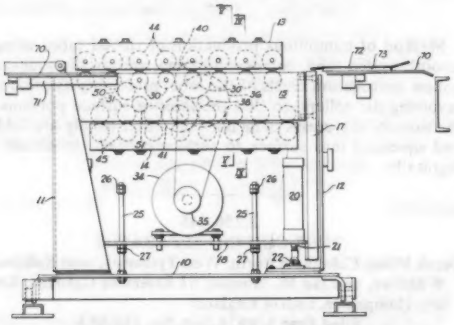
SHIFTABLE MULTIPLE ROLL FORMING APPARATUS

Clarence O. Jones, Jr., Eggertsville, N.Y., assignor to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,225

Int. Cl. B21d *5/08, 5/14*

U.S. Cl. 72—181 **6 Claims**



A roll forming apparatus for sheet metal comprises a generally stationery framework having a vertically movable carriage supported thereby, which carriage includes two separate sets of progressive forming rolls, one above the other. The carriage is movable vertically by fluid cylinder means to dispose either of the two sets of forming rolls at a particular working level to selectively form two different types of formations in a work sheet. A drive motor for the forming rolls and the transmission therefrom to the forming rolls is mounted upon the vertically movable carriage.

3,750,447

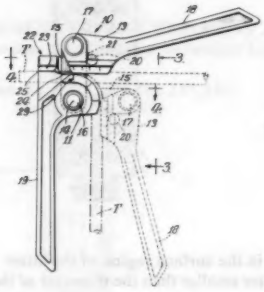
TUBE BENDER

Leonard J. Kowal, Prospect Heights, and William R. Saddler, Grayslake, both of Ill., assignors to Imperial-Eastman Corporation, Chicago, Ill.

Filed Sept. 28, 1971, Ser. No. 184,567

Int. Cl. B21d *11/04;* **B21j** *13/08*

U.S. Cl. 72—319 **18 Claims**



A manually operable tube bender wherein a straight tube is inserted between a mandrel and a bending shoe with the bending shoe being swung about the axis of the mandrel groove to progressively bend the tube into the groove. A hook is provided for preventing longitudinal movement of the tube as a result of the friction forces generated by the sliding of the hook against the tube as it is bent. A number of different forms of such hooks are disclosed for providing improved tube retention.

3,750,448

TWIN STAND ROLLING MILL-AZIAL ROLL ALIGNMENT

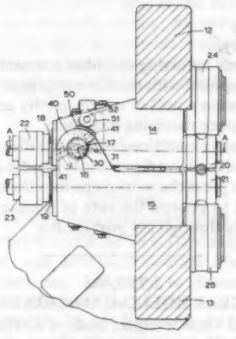
Roy R. Oxlade, London S. W. 8, England, assignor to The British Iron and Steel Research Association, London, England

Filed Mar. 18, 1971, Ser. No. 125,678

Claims priority, application Great Britain, Mar. 18, 1970, 12,997/70

Int. Cl. B21b *31/18*

U.S. Cl. 72—247 **9 Claims**



A four-high rolling mill stand has each work roll mounted to the free end of a preloaded drive shaft rotatably carried in an individual arm pivotally mounted in the mill frame. The effective position of the pivot axis of one arm is movable through a limited arc relative to the pivot axis of the other arm by means of limited rotation of eccentric pivot pins, whereby to effect adjustment of the axial position of the work rolls relative to one another to avoid ovality or assymetry in the rolled stock.

3,750,449
ARRANGEMENT IN STORAGE TYPE WIRE DRAWING MACHINES FOR CONTINUOUSLY CONTROLLING THE SPEED OF AN INDIVIDUALLY DRIVEN DRAWING BLOCK HAVING AN ASSOCIATED GUIDE BLOCK ARRANGED COAXIALLY THEREWITH AND A GUIDE PULLEY ARRANGED BETWEEN THE BLOCKS

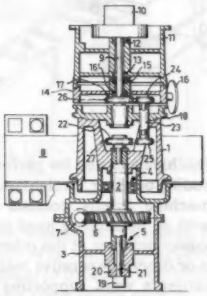
Karl Lars Gunnar Rabe, Arboga, and Karl Sune Ingemar Hanaeus, Smedjebacken, both of Sweden, assignors to Aktiebolaget Arboga Mekaniska Verkstad, Arboga, Sweden

Filed Oct. 10, 1971, Ser. No. 190,890

Claims priority, application Sweden, Oct. 21, 1970, 14188/70

Int. Cl. B21c *1/12*

U.S. Cl. 72—288 **3 Claims**



There is provided an arrangement in storage type wire drawing machines for continuously and automatically controlling the speed of an individually driven drawing block having an associated guide block arranged coaxially therewith and a guide pulley arranged between the blocks, which guide pulley is mounted for rotation on a support means journalled between the blocks and being capable of pivoting relative to the blocks. The pivoting movements of the support means are used to control the speed of rotation of the driven drawing block. The arrangement also includes a machine element which is securely mounted between the blocks on a depending journal pin or shaft over the drawing block and supports transmission means adapted to transmit the pivoting movements of the support means to a device which transmits a signal in response to said pivoting movements to the motor driving the block, thereby to change the speed at which the block rotates.

3,750,450
MANUFACTURE OF ARTICLES

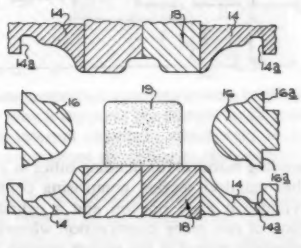
Herbert John Sharp, Greenford, and Margaret Evelyn Norrish, London, both of England, assignors to GKN Sankey Limited, Bilston, England

Filed June 22, 1971, Ser. No. 155,586

Claims priority, application Great Britain, June 26, 1970, 31,088/70

Int. Cl. B21j *13/02*; B21k *1/32*

U.S. Cl. 72—353 **7 Claims**



The specification discloses a method of making a road wheel for a vehicle in which the material of the wheel has anisotropic properties. The wheel comprises a central portion, a peripheral or rim portion and a plurality of separate radial portions between the central portion and the rim portion. The specification describes how anisotropic properties can be obtained in the radial portions and the peripheral portion by causing the material to flow radially along the radial portions and peripherally around the peripheral portion during the formation of the wheel. This formation is effected by placing a billet of flowable material in a cavity and then moving selected elements of the cavity to produce the desired flow of the material. The wheel can be made of a thermoplastic, synthetic polymeric material with or without fibre reinforcement, a thermosetting, synthetic polymeric material with fibre reinforcement or a metal with or without fibre reinforcement.

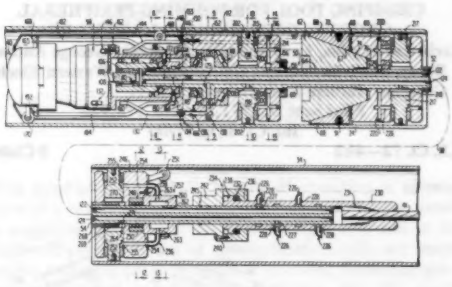
3,750,451
INTERNAL TENSIONING SYSTEM FOR LAYING PIPELINE

Clyde E. Nolan, Jr., Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Division of Ser. No. 28,733, April 15, 1970, Pat. No. 3,645,105. This application Nov. 9, 1971, Ser. No. 197,176

Int. Cl. B21d *39/08*

U.S. Cl. 72—393 **7 Claims**



A method and apparatus for laying pipeline wherein the pipeline is externally clamped so as to be substantially fixed with respect to a floating vessel prior to connection of a new section of pipeline. After this connection, the pipeline is internally engaged by internal clamp means which is paid out with the pipeline being held under tension. Then the pipeline is again clamped externally and the internal clamp means is retrieved. A new section of pipeline is added and the payout operation is repeated.

The internal clamp means may be fluid operated and may be provided with means for engaging both the existing pipeline and the new joint. The portion of the internal clamp means engaging the new joint is mounted for rotation and translation with respect to the remaining portion of the internal clamp means to permit alignment of the pipeline and the new joint. Power transfer means is carried by a mandrel of the internal clamp means for use in actuating and moving the clamp means as well as for possible use with other equipment utilized internally of the pipeline.

3,750,452
COLLET CRIMPER

Irving Frank, Euclid, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

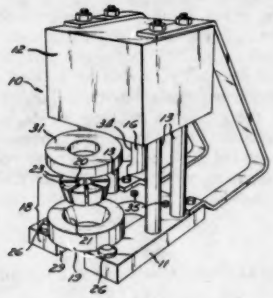
Filed Oct. 7, 1971, Ser. No. 187,410

Int. Cl. B21d *41/00*

U.S. Cl. 72—402 **10 Claims**

A collet crimping machine for permanently attaching fittings to hose assemblies including a crimping die assembly, having a die block and a multi-jawed collet, and resilient spacer means for angularly aligning the collet jaws in the die block while permitting the jaws to provisionally grip the fitting

and allowing the jaws to be separated along a radial line for lateral passage of the fitting into and out of the collet. The



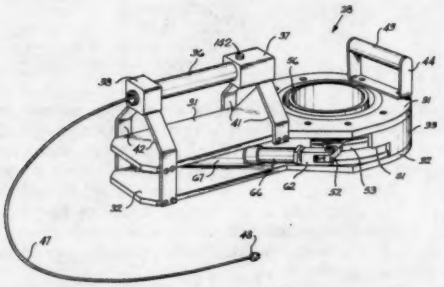
machine is preferably arranged such that the collet is automatically biased in the die ring to the sleeve gripping position to minimize manual set-up operations.

3,750,453

CRIMPING TOOL FOR FORMING PERIPHERAL GROOVES IN CYLINDRICAL ARTICLES

Kerin Lee Dryden, Lawrenceville, and Roger George Anthony Ebrey, Snellville, both of Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,922
Int. Cl. B21d *41/00*
U.S. Cl. 72—402 **9 Claims**



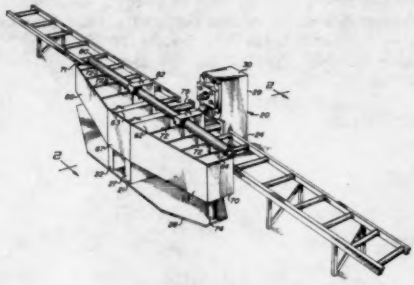
A crimping tool includes a plurality of curved article forming members or blades pivotally supported at one end in two adjoining layers in an apertured housing to define a circular opening for axially receiving a cylindrical article, for example, a cap-type seal for sealing a communications cable. A rotatable member overlying the blades is provided with a plurality of cam follower rollers, each of which engages one side of the free end of each blade. An arm on the rotatable member is coupled to a movable piston rod disposed in a hydraulic cylinder supported on the housing and driven by an electrically activated hydraulic control system which may be selectively actuated through a pushbutton switch on a handle attached to the housing. The closure of the switch activates the cylinder, moving the arm, partially to rotate the rotatable member urging the rollers against the free ends of the blades inwardly to contract the circular opening to form a pair of adjoining internally-projecting ribs in the cap to form a hermetic seal between the inner surface of the cap and the contiguous outer surface of the cable sheath. The hydraulic pressure may be adjusted to provide grooves of a sufficient depth to seal caps on cables of various sizes.

3,750,454

HORIZONTAL METAL-WORKING MACHINE

Robert M. Jepson, Phoenix, Ariz., assignor to Ramsey Steel Company, Inc., El Paso, Tex.

Filed Feb. 9, 1972, Ser. No. 224,668
Int. Cl. B21d *3/10*
U.S. Cl. 72—441 **9 Claims**



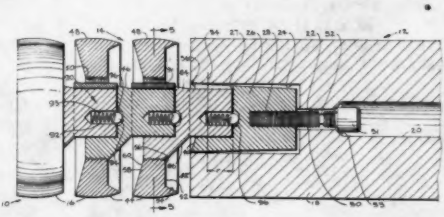
A metal-working machine adapted for performing a plurality of operations, including bending, straightening or punching metal shapes. The machine, briefly, consists of a horizontal load-bearing frame with an upstanding head stock at one end of the frame and a bolster member at the other end for carrying anvils, female die or other cooperative metal working elements. The frame carries a work supporting bed such that horizontal oriented metal shapes are horizontally carried between the head stock and the bolster. An hydraulic cylinder is supported by the head stock and actuates a ram or other metal working tool to engage the metal shape and exert pressure on the work in the direction of the bolster to cooperate with the appropriate metal working element carried by the bolster. The head stock is provided with controls for varying the vertical placement of the horizontal hydraulic cylinder. The bolster supports the cooperative metal working element such that it can be moved along the bolster to proper cooperative position with the metal element actuated by the horizontal ram.

3,750,455

ERECT TUBE BENDING MANDREL

Ronald R. Stange, Denver, and Gary B. Ward, Aurora, both of Colo., assignors to Tools for Bending, Inc., Denver, Colo.

Filed Dec. 27, 1971, Ser. No. 212,229
Int. Cl. B21d *9/01*
U.S. Cl. 72—466 **12 Claims**



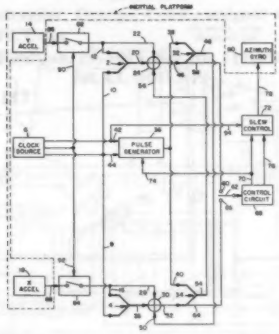
A tube bending mandrel for bending tubes in a single plane has a flexible mandrel section comprising connecting links having a cylindrical male portion and a cylindrical socket female portion of one-piece construction wherein each male portion is pivotally seated in the socket portion of each next connecting link and retained therein by outer ring members that are threaded onto the respective links.

3,750,456

MEANS FOR DETERMINING HEADING ALIGNMENT IN AN INERTIAL NAVIGATION SYSTEM

Ferman L. Walker, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Dec. 30, 1970, Ser. No. 102,575
Int. Cl. G01c 25/00
U.S. Cl. 73—1 E 4 Claims



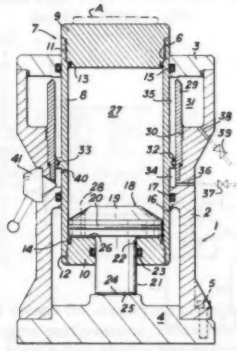
This invention relates to apparatus for determining the heading alignment of an inertial navigation system by allowing the inertial platform to drift and employing the outputs of the accelerometers on the platform axes to compute the drift rate components, determining the amount and direction of platform drift corresponding to the computed components, and correcting the heading data of said system with the computed data.

3,750,457

PNEUMATIC MACHINE FOR THE CREATION OF MECHANICAL SHOCKS OF VARIABLE AMPLITUDE AND INTENSITY

Adrien Pascquet, Toulon, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 1, 1971, Ser. No. 203,638
Int. Cl. G01n 3/30
U.S. Cl. 73—12 8 Claims



The machine comprises a moving system consisting of a hollow cylinder which supports the sample to be tested and has two separate internal chambers which vary in volume in a complementary manner according to the position of a piston within the cylinder.

A fixed body which guides the moving system in translation comprises an internal jacket against which bears an external collar of the cylinder, thus forming two chambers which are external to the cylinder and vary in volume with the movement of the moving system.

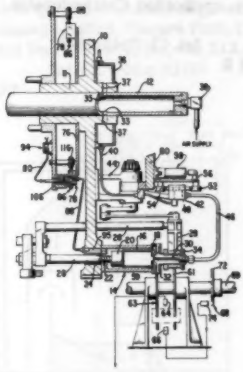
Means are provided for applying different pressures of a pneumatic control fluid to the internal and external chambers and for abruptly varying the pressure in one of the external chambers in order to cause rapid displacement of the moving system.

3,750,458

HIGH PRESSURE CAN TESTING APPARATUS

Clifford Harry Messervey, East Randolph, and Maynard Harry Riddell, Randolph, both of N.Y., assignors to Borden, Inc., New York, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,892
Int. Cl. G01m 3/02
U.S. Cl. 73—45.1 14 Claims



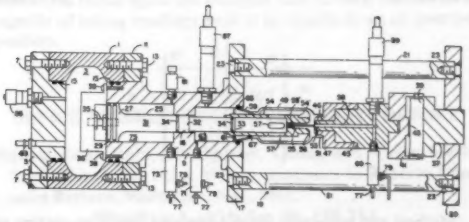
The apparatus includes a plurality of chambers in association with a spider wheel for receiving cans to be tested, means for supplying pressurized gas into the cans disposed in the chambers, sensing means in communication with the chambers for detecting gas leaking out of the cans, three-way spool valves interposed between the chambers and the supply means, two-way spool valves interposed between the sensing means and the chamber, means for actuating the three-way valve to a closed position when a chamber is empty so as not to pressurize needlessly an empty chamber and means for bleeding the gas from the sensing means.

3,750,459

HYDRO-DYNAMIC TESTING APPARATUS

Thompson, Johnny L. Prater, and Steven P. Ryder, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 14, 1972, Ser. No. 271,955
Int. Cl. G01m 3/02
U.S. Cl. 73—49.4 5 Claims



An apparatus for hydro-dynamically testing missile motor cases under simulated flight conditions. The apparatus provides means for mounting the motor case and produces the

resultant loads equivalent to reaction loads that a case would encounter in flight. Water under low pressure is induced inside of the motor case and when combined with a high pressure piston acting on the water produces two of the simulated resultant loads. Water under low pressure in a separate cavity combined with high pressure from the same piston produces the third simulated resultant load.

3,750,460

THROUGH-FLOW POLAROGRAPHIC ANALYZER HAVING CONSTANT FLOW FACILITIES

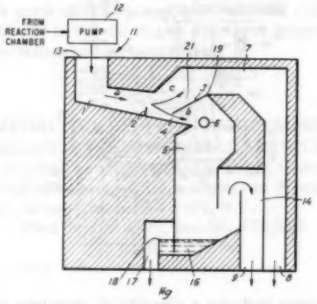
Miloslav Vesely; Zdenek Bohac, and Frantisek Vondrak, all of Pardubice, Czechoslovakia, assignors to Vyzkumny ustar organickkyck syntez, Pardubice, Czechoslovakia

Filed Apr. 10, 1972, Ser. No. 242,379

Claims priority, application Czechoslovakia, Apr. 9, 1971, 2543

Int. Cl. B01k *3/00*

U.S. Cl. 73—61.1 R **4 Claims**



A main measuring path and an auxiliary path individually extend from a common junction at the input of a polarographic analyzer to separate output ports thereof. A vane defining a common wall between the two paths cooperates with a transversely disposed baffle member located upstream of a vane to direct a relatively small, substantially constant portion of the total input flow toward the main path, thereby permitting efficient liquid separation at the output of the main path. The remainder of the input flow is directed through the auxiliary path.

3,750,461

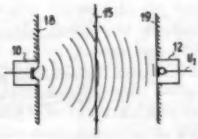
METHOD OF AND AN APPARATUS FOR DETERMINING THE CROSS-SECTION OF PRODUCTS OF THE TEXTILE INDUSTRY, ESPECIALLY THAT OF YARNS, ROVINGS AND SLIVERS

Ernst Felix, Uster, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

Filed June 16, 1971, Ser. No. 153,765

Int. Cl. G01n *29/00*

U.S. Cl. 73—67.5 **22 Claims**



Method and apparatus for determining the cross-section of textile products including means for generating a sound field at least partially within a resonator and means for measuring the phase disturbance in said sound field created by the passage of a textile product therethrough.

3,750,462

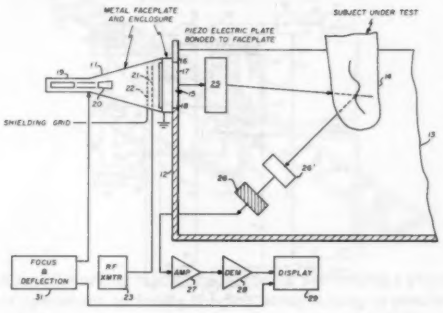
ULTRASONIC VISUALIZATION IMPROVEMENT

George William Gray, Lambertville, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 73,521, Sept. 18, 1970, Pat. No. 3,718,032. This application June 22, 1972, Ser. No. 265,129

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.7 **3 Claims**



An ultrasonic transmitting apparatus for examination of a subject in a field comprising, a CRT transmitter having a transducer excited at relatively low energy level and at a frequency which is half of the resonating frequency of the transmitting transducer to enhance receiver sensitivity. The transmitting transducer is excited in a pattern to generate corresponding successive acoustic waves to scan the subject in "-flying spot" type fashion, and a receiver including a non-scan receiving transducer for electrically converting the subject reflected signals and providing a visual display.

3,750,463

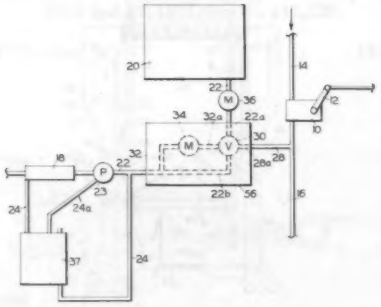
FUEL MEASURING SYSTEM FOR VEHICLES

Curtis L. Erwin, Jr., 5805 S.E. Gladstone St., Portland, Oreg.

Continuation of Ser. No. 733,961, June 3, 1968. This application July 10, 1970, Ser. No. 53,970

Int. Cl. B60k *15/02*

U.S. Cl. 73—113 **10 Claims**



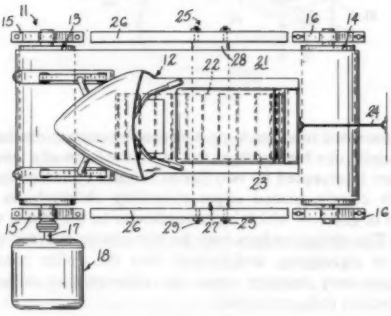
The fuel measuring system of the invention is intended for use with a vehicle of the type wherein its fuel mixing device returns unburned fuel to the fuel supply. Such system includes an air bubble eliminator and further includes a fuel by-pass provided with a meter. A valve is included in the system which has two positions a first one of which provides normal flow of fuel to the fuel mixing device and a second one of which provides flow through the by-pass to measure the flow. The valve is operably connected to the emergency brake or a power take-off so that it is moved to its second position when the

emergency brake or power take-off is activated. Also included in the system is a second meter arranged to measure total flow of fuel from the fuel tank of the vehicle. The valve and the meter associated with the by-pass are preferably incorporated in a single compact housing.

3,750,464
DYNAMOMETER APPARATUS FOR CLEATED VEHICLES

Robert F. Ostrander, Orange, Conn., assignor to Ostradyne, Inc., Milford, Conn.

Filed Jan. 29, 1971, Ser. No. 111,059
Int. Cl. G01l *5/13*
U.S. Cl. 73—117 **7 Claims**

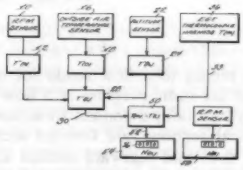


Chassis dynamometer apparatus for cleated, track driven vehicles having an endless belt for frictional contact with the cleats, wherein the belt is a V-belt or a cog belt having a surface layer of a resilient material capable of embedding the cleats of such vehicles without substantial slippage and destruction of the belt.

3,750,465
ENGINE PERFORMANCE INDICATOR

John S. Howell, and Richard L. Rowan, both of Fort Worth, Tex., assignors to Howell Instruments, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 89,580, Nov. 16, 1971. This application Sept. 9, 1971, Ser. No. 179,141
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **10 Claims**

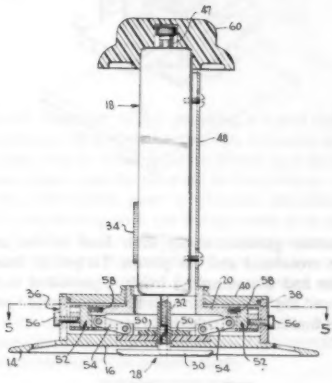


A method and means for measuring changes in the quality of gas turbine engine performance, efficiency or engine trim by measuring at least a first engine parameter such as RPM, computing a second engine parameter value such as exhaust gas temperature (EGT) from the first measured parameter, also measuring the actual value of the second engine parameter and subsequently comparing the computer with the actual values (after possible correction factors have been taken into account) to indicate changes in engine performance or trim. The computed and actual values may also be integrated prior to comparison or a difference between the computed and actual values may first be taken and this difference subsequently integrated for comparison with a standard comparison value such as may be obtained by integrating one of the parameters or a time representative signal over the same timed interval. If the comparison takes the form of a ratio, the periods of integration may be chosen to insure that the denominator is an even power of ten such that the integral representing the numerator may be directly interpreted as a performance index. Simpler trim test equipment is also disclosed for measuring engine parameters such as EGT and RPM and automatically converting such measurements to standard day conditions before display to permit quick static or ground trim testing without requiring numerous hand calculations.

3,750,466
DEVICE FOR MEASURING THE TENSION OF EXTENDED FLEXIBLE MATERIALS

William C. Ott, Westmount, and Leo Paul Dionne, Trois-Rivieres, both of Quebec, Canada, assignors to Niagara Wire Weaving Company Limited, Niagara Falls, Ontario, Canada

Filed Dec. 29, 1971, Ser. No. 213,578
Int. Cl. G01m *33/36*
U.S. Cl. 73—159 **6 Claims**



A device for measuring the tension of extended flexible materials is disclosed, the device comprising a substantially circular ring member having a handle assembly slidably connected thereto for axial movement towards and away from the ring member. Resilient biasing means such as compression springs are disposed between the ring member and the handle assembly for resisting the axial movement. Pressure sensing means are disposed for axial movement with the ring member for thereby measuring the amount of pressure to which it is exposed upon thrusting of the device against an extended flexible material. During such thrusting of the device and upon a predetermined axial movement of the handle assembly relative to the ring member, brake means are actuated by the handle assembly for restraining the pressure sensing means against further movement to thereby deactivate same. The device is capable of measuring the tension of extended flexible materials irrespective of the angle, position, or pressure at which it is thrust upon the material, and further, the device is capable of taking readings even in an upside-down or inverted position.

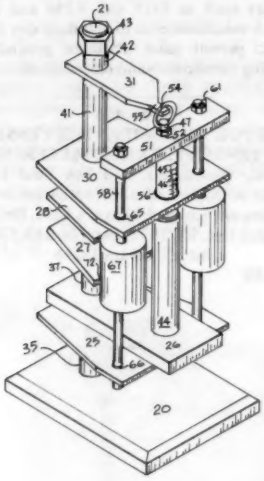
3,750,467
DEVICE TO MEASURE COMPRESSIBILITY OF SOFT MATERIALS

Manuel Jesus Rubio, Bridgeport, Conn., and Victor Mario Leal, Monterrey, N.L., Mexico, assignors to Roberto Gonzalez Barrera, Monterrey, N.L., Mex.

Filed Nov. 3, 1971, Ser. No. 195,314
Int. Cl. G01n *3/08, 33/10*
U.S. Cl. 73—169 **3 Claims**

In testing soft materials, particularly tortilla cooked corn, the invention provides a simple device having a vertical

cylinder cooperating with a vertical piston and means to apply a starting weight. A crosshead and crosshead guides assure satisfactory operation of the piston without binding. Weights in one position float on the crosshead guides held by latches



and in another position apply their load to the crosshead guides, the crosshead and the piston. To permit insertion of the cylinder and the sample a latch is provided to hold the crosshead and the piston in inoperative position, to remove or insert the cylinder and to substitute samples.

3,750,468

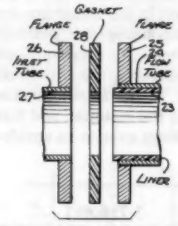
LINED FLOW TUBE FOR ELECTROMAGNETIC FLOWMETER

Oscar Grauer, Philadelphia, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 8, 1971, Ser. No. 132,385

Int. Cl. G01f *1/00*; G01p *5/08*

U.S. Cl. 73—194 EM **4 Claims**



An electromagnetic flowmeter having a pipe section through which fluid to be measured is conducted, the pipe section being constituted by a titanium tube having an insulating liner formed of alumina. A pair of electrodes are mounted at diametrically opposed positions on the pipe section and are insulated from the tube. Surrounding the pipe section are electromagnetic coils adapted to establish a field within the pipe section.

3,750,469

IONIZATION-TYPE FLOW METER

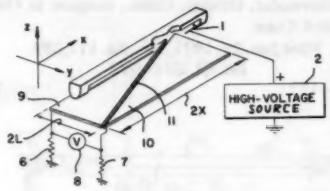
Owen Storey, Varenne-Jarey, France, assignor to Societe Industrielle d'Electronique et d'Informatique, Paris, France

Filed Aug. 3, 1971, Ser. No. 168,715

Claims priority, application France, Aug. 3, 1970, 7028636

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 F **10 Claims**



Ions generated in a moving gas stream by corona discharge in the vicinity of a high-voltage anode, in the form of a wire or a disk, are intercepted by two flat or tubular collector members with closely spaced edges extending obliquely to the direction of gas flow which is perpendicular to the anode wire or disk. The oblique edges may be straight or curved, continuous or zigzagging, and extend over the entire zone in which ions may impinge upon the collectors at different flow velocities to be measured.

3,750,470

FLOW SONDE FOR MEASURING THE TOTAL PRESSURE AND THE STATIC PRESSURE OF A FLOW

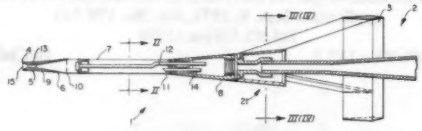
Peter Partzsch, Eichenau near Munich, Germany, assignor to Dornier A.G., Friedrichshafen/Bodensee, Germany

Filed Oct. 18, 1971, Ser. No. 189,932

Claims priority, application Germany, Nov. 7, 1970, P 20 54 954.6

Int. Cl. G01p *5/16*

U.S. Cl. 73—212 **3 Claims**



This invention relates to a flow sonde for measuring the total pressure and the static pressure of a flow comprising a cylindrical forward section, a conical transitional section, a rearward cylindrical section, said forward section having a smaller diameter than said rearward section and the transitions from each section to the next extending in a sharp-edged manner, and aperture means on said sonde for taking the total pressure and the static pressure.

3,750,471

BIFURCATED THERMOMETER PROBE

Norman C. Bremer, 608 E. Seneca St., Ithaca, N.Y.

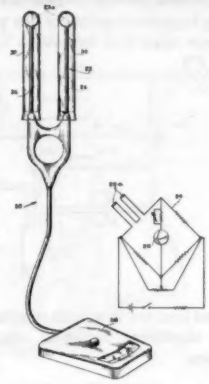
Filed Mar. 4, 1971, Ser. No. 120,825

Int. Cl. G01k *7/24*; H01c *7/04*

U.S. Cl. 73—342 **5 Claims**

For use in connection with oral clinical thermometers and average reading industrial thermometers, a plurality of branches on a single probe connected to yield a temperature reading which is the average of the temperatures sensed at

each branch. For oral use, the spaced distance between two branches is substantially the same as the distance between the



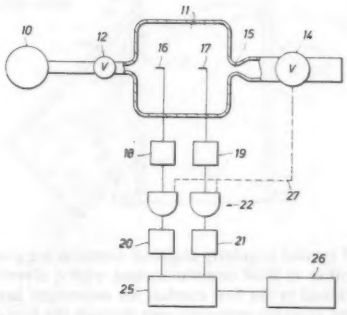
pockets on opposite sides of the fraenum of the tongue to prevent lateral movement of the probe and resulting erroneous temperature measurement.

3,750,472

APPARATUS FOR MEASURING THE MASS FLOW OF GASES

Robert Eugene Raymond Ducousset, Clamart, France, assignor to Compagnie Des Compteurs, Paris, France

Filed Feb. 1, 1971, Ser. No. 111,297
Claims priority, application France, Feb. 6, 1970, 7004219
Int. Cl. G01f 1/00
U.S. Cl. 73—205 D **8 Claims**



The disclosed apparatus measures the mass rate of flow of gas through an orifice of a flow nozzle under critical flow conditions and comprises a reservoir having an inlet connected to a source of high pressure through a first valve and an outlet connected to a flow nozzle adapted to conduct pressurized gas from said reservoir under critical flow conditions to a region of low pressure downstream of the flow nozzle. The critical flow conditions are established by a second valve mounted downstream of the nozzle orifice. Density and pressure measuring devices are coupled to the reservoir and provide signals representative of the density and pressure, respectively, of the gas flowing through the flow nozzle. The density and pressure signals are applied to a device which calculates the square root of the product of density and pressure to provide a signal proportional to the mass rate of gas flow.

In a first embodiment, the second valve is operatively coupled to the calculating device in order that this device provides a signal only when the second valve is opened.

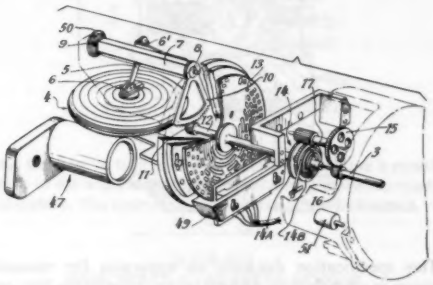
In a second embodiment the density measuring device is operatively coupled to the first valve in order to maintain the density of the gas flowing through the flow nozzle at a constant value.

3,750,473

ALTIMETERS

John Theodore George Bennett, Romsey, and John Anthony Read, Southampton, both of England, assignors to Kollsman Instrument Limited, Southampton, England

Filed Mar. 4, 1971, Ser. No. 120,878
Claims priority, application Great Britain, Mar. 17, 1970, 12,825/70
Int. Cl. G01l 7/14
U.S. Cl. 73—387 **3 Claims**



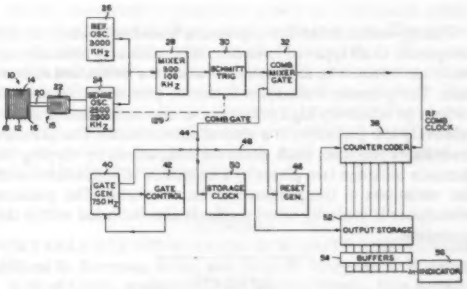
An aircraft altimeter which provides a signal indicative of altitude represented in coded form. The altimeter includes an indicator dial, one or more pointers driven by a pointer shaft, and an evacuated capsule coupled to the pointer shaft via a linkage and differential gear mechanism associated with a main shaft cooperating with the linkage such as to effect rotation of the pointer shaft in response to changes in atmospheric pressure with altitude. An encoder disc, which has opaque and non-opaque portions in coded form, is mounted on the main shaft and a light source arranged to direct light on to the disc together with sensing means responsive to the light passing through the disc provide a coded signal representation of the movement imparted to the pointer shaft.

3,750,474

ALTITUDE ENCODER

Dale Pollack, Clearwater, Fla., assignor to Aerosonic Corporation, Clearwater, Fla.

Filed June 28, 1971, Ser. No. 153,478
Int. Cl. G01l 7/12, 9/10
U.S. Cl. 73—386 **18 Claims**



An altitude encoder which provides a digital readout from a barometric sensor comprised of an aneroid bellows linked mechanically with a means to control the frequency of a sense oscillator. The sense oscillator produces a frequency proportional to altitude which constitutes an output signal to a counter. The output of a counter represents altitude and is stored for readout or fed into a transponder for transmission to the ground.

3,750,475

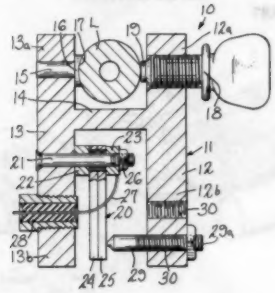
FLUID PRESSURE MONITORING SYSTEM

Preston R. Weaver, Rocky Hill, Conn., assignor to UMC Electronics Company, North Haven, Conn.

Continuation-in-part of Ser. No. 60,429, Aug. 3, 1970. This application Aug. 3, 1972, Ser. No. 277,602

Int. Cl. G01l 9/00

U.S. Cl. 73—398 AR **10 Claims**



This specification discloses an apparatus for measuring pressure in a tubular line without interruption of the line, comprising a pair of spaced apart arms; a bridging member extends between the arms and is constructed and arranged to flex upon expansion of a line clamped between the arms on one side of the bridging member, and a transducer effective to produce a signal which varies as a function of a force applied thereto is supported on one of the arms on the other side of the bridging member while a force transmitting member is carried on the other of the arms on the other side of the bridging member.

3,750,476

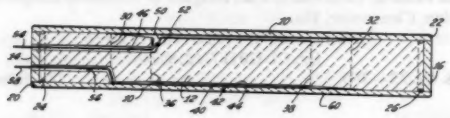
PRESSURE TRANSDUCER

Neil L. Brown, El Cajon, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed Sept. 25, 1967, Ser. No. 670,210

Int. Cl. G01l 9/12

U.S. Cl. 73—398 C **6 Claims**



This invention relates to a pressure transducer which is able to operate in all types of environments, including normally adverse environments, to provide an accurate indication of pressure. The pressure transducer is able to provide accurate indications of relatively high pressures in one embodiment and of relatively low pressures in a second embodiment. The pressure transducer provides such accurate indications by varying the distance between two plates of a capacitor in accordance with the variations in the pressure to be measured. The pressure transducer is made by novel methods also included within this invention.

3,750,477

LIQUID SAMPLING

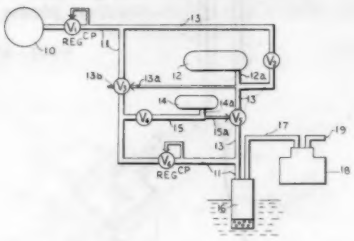
Michael D. Rutkowski, Phoenixville, and Richard R. Thompson, West Chester, both of Pa., assignors to Pro-Tech, Inc., Malvern, Pa.

Filed Jan. 4, 1972, Ser. No. 214,822

Int. Cl. G01n 1/14

U.S. Cl. 73—421 B **12 Claims**

Samples are taken from a body of liquid at intervals by converting continuous flow of fluid from a pressurized source into intermittent sample-propelling flow. Both the repetition frequency of sampling and the duration of individual samplings is controlled through regulation of the propellant flow rate. Principal uses are in stream monitoring for pollution control, sewage treatment facilities, and industrial waste reduction programs.



3,750,478

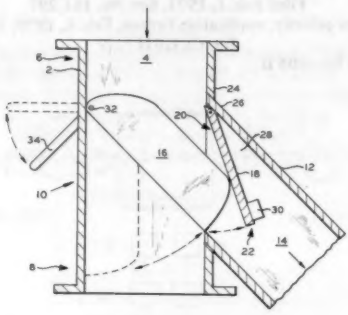
SAMPLING APPARATUS

William A. Keene, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 5, 1972, Ser. No. 259,715

Int. Cl. G01n 1/20

U.S. Cl. 73—423 R **7 Claims**



First and second angularly disposed conduits are connected to one another in fluid communication with a diverting element positioned in the first conduit for movement between a first position at which materials pass through the first conduit and a second conduit is closed by a sealing element, and a second position at which the first conduit is closed by the diverting element, materials are diverted into the second conduit by the diverting element, and the sealing element is moved to an open position in response to movement of the diverting element.

3,750,479

TILTING TABLE FOR ERGOMETER AND FOR OTHER BIOMEDICAL DEVICES

Raymond L. Gause, and Raymond A. Spier, both of Huntsville, Ala., assignors to The United States of America as represented by the National Aeronautics and Space Administration

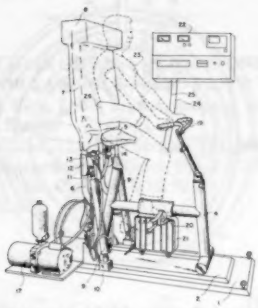
Filed May 8, 1972, Ser. No. 251,609

Int. Cl. G01l 5/02

U.S. Cl. 73—379 **9 Claims**

The apparatus is for testing the human body in a variety of positions, ranging from the vertical to the supine, while exercising on an ergometer; and can also be used for angular positioning of other biomedical devices. It includes a floor plate

and a hinged plate upon which to fix the ergometer, a back rest and a head rest attached at right angles to said hinged plate and behind the seat of the ergometer, dual hydraulic cylinders for raising and lowering the hinged plate through 90° by means of a self contained hydraulic system, with valve



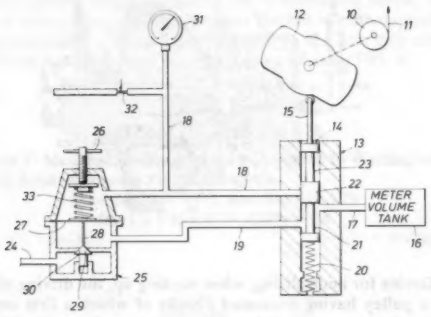
means for control and positive stops on the apparatus to prevent over travel. Tests can be made with the subject positioned on the seat of the ergometer, through the various angles, with a substantially normal body attitude relative to said seat and ergometer.

3,750,480

PNEUMATIC MEASUREMENT APPARATUS

Ethell J. Dower, Houston, Tex., assignor to Warren Automatic Tool Company, Houston, Tex.

Filed Apr. 23, 1971, Ser. No. 136,740
Int. Cl. G01p *3/26*; E21b *45/00*
U.S. Cl. 73—506 **13 Claims**



A pneumatic apparatus and method for measuring a function. Pneumatic pulses representative of the function are generated, integrated and monitored as an indication of the function. The integrated pulse pressure is controllably vented and means are provided for supplying to the pulse generator a pressurized pneumatic fluid which is incrementally higher in pressure than the pressure of the integrated pulses.

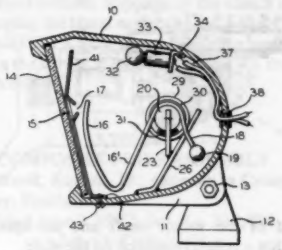
3,750,481

ACCELEROMETER

Eric L. Hays, West Allis, Wis., assignor to AMU Company, West Allis, Wis.

Filed July 1, 1971, Ser. No. 158,738
Int. Cl. G01p *15/02*
U.S. Cl. 73—515 **1 Claim**

A balanced arm comprising an indicator wire and a counterweight is supported on a taut cord that serves as a rotational axis which is transverse to the direction in which acceleration is to be measured. The indicator wiere extends toward a scale which is visible from the front of the instrument. Linear acceleration of the vehicle on which the instrument is mounted



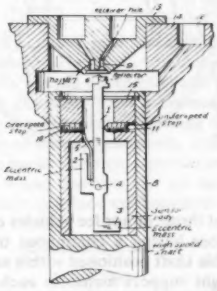
causes the arm to turn and the indicator to assume a position relative to the scale corresponding with instantaneous relative acceleration. The instrument will also indicate inclination.

3,750,482

HIGH SPEED OVERSPEED SENSOR

Howard B. Kast, Fairfield, Ohio, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 9, 1971, Ser. No. 206,394
Int. Cl. G01p *3/20, 3/26*
U.S. Cl. 73—521 **6 Claims**



Simple inexpensive apparatus senses an overspeed condition of a high speed shaft, of a turbine for example. There is no wearing moving part unless the shaft overspeeds. Then one pivoted part or arm moves a very small degree carrying a cup-shaped reflector into the path of a small jet of fluid. This reflector cup reflects the jet stream to a receiver hole and conduit. The conduit leads off to apparatus which shuts off the engine or reduces the power input until the shaft speed is reduced below the overspeed limit.

3,750,483

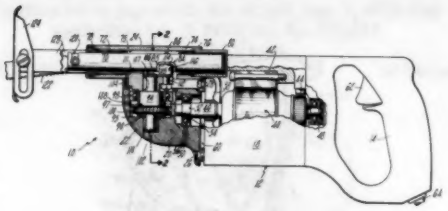
PORTABLE RECIPROCATING SAW DRIVE MECHANISM

Milford D. Burrows, Avon, and Peter H. Morganson, Winsted, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Apr. 21, 1972, Ser. No. 246,156
Int. Cl. F16h *21/18*
U.S. Cl. 74—50 **7 Claims**

An elongated portable reciprocating saw having a rear spade handle, a forwardly projecting tubular saw blade support slide, an intermediate electric motor with a longitudinally extending drive shaft in parallel overlapping relationship with the tubular slide, and a pair of upstanding rotary drive assem-

blies on opposite sides of the motor shaft and tubular slide each having a worm wheel in engagement with a worm on the



forward end of the motor shaft and an upstanding roller received within a yoke crosspiece on the slide.

3,750,484

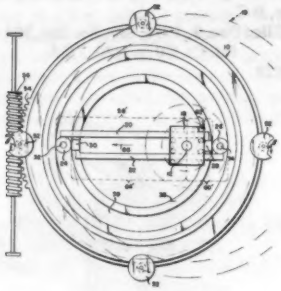
CENTRIFUGAL THRUST MOTOR

Paul M. Benjamin, R.R. 2, Onawa, Iowa

Continuation-in-part of Ser. No. 836,815, June 26, 1969, abandoned. This application June 16, 1971, Ser. No. 153,782

Int. Cl. F03g *3/00*

U.S. Cl. 74—84 S **10 Claims**



A centrifugal thrust motor for vehicles or the like including a frame member having a continuous track portion and a rotating shiftable shaft positioned within said track portion; at least two weight support members each having a working length secured to the shaft, and a drive mechanism provided for rotating the shaft in a direction transverse to the axis of the shaft, whereby when the shaft is rotating, upon shifting the shaft, the working length of the remainder of the weight support members in at least one point of the rotation of the weights, so as to move a vehicle or the like by providing a thrust in a direction transverse to the shaft, with appropriate braking for the opposite thrust of the weights.

3,750,485

INFINITELY VARIABLE POSITIVE MECHANICAL TRANSMISSION

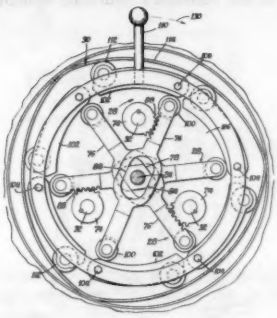
John H. Blakemore, Oak Park, Ill.

Filed Sept. 16, 1971, Ser. No. 180,983

Int. Cl. F16d *21/10*

U.S. Cl. 74—125.5 **11 Claims**

A positive drive mechanical transmission providing infinite variations of output speed relative to input speed and comprising an output member driven continuously by one or another of a plurality of one-way clutches connected in parallel with each other and driven in synchronism but in phase displacement to each other by a corresponding plurality of mechanical oscillators of infinitely variable angular displacement which are continuously driven by an input driving member. The mechanical oscillators are powered by cams which can be shaped through design to assure through the intervening one-way clutches a constant speed actuation of the driven member, the drive through the several one-way clutches actuated by the corresponding mechanical oscillators being over-



lapping to the end that the driving connection between the transmission input member and the transmission output member is positive and continuous.

3,750,486

SAFETY DEVICE FOR NEUTRALIZING THE CLUTCH OF A SNOWMOBILE

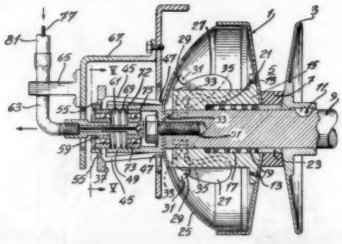
Regis Belanger, St-Isidore, Quebec, and Edouard Belanger, St-David, Quebec, both of Canada

Filed Dec. 9, 1971, Ser. No. 206,423

Claims priority, application Canada, July 2, 1971, 117,290

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 E **5 Claims**



Device for neutralizing, when starting up, the driving effect of a pulley having truncated cheeks of which a first one is secured on a rotary axle whereas a second one is slidably mounted thereon, the cheeks being biassed by a spring tending to move the second cheek from the first one, this movement being however subjected to the counter-effect of a governor mounted on the axle to rotate therewith and of which the centrifugal masses act on the second cheek to bring it back toward the first one as soon as the axle is brought into rotation beyond a predetermined speed. This device comprises a locking mechanism mounted on the axle to cooperate with the second cheek in such a manner as to prevent it, as soon as the axle starts rotating, from moving toward the first cheek under the action of the centrifugal masses. It also comprises a manually operable mechanism related to the said locking mechanism in such a way as to release, when operated, the second cheek so that it may suddenly be projected toward the first cheek when the axle is placed in rotation at a speed greater than the said predetermined speed. This locking mechanism comprises a collar solid with the second cheek and two levers pivotally mounted at one end on the axle so that their other end may move away from the axle under the effect of the centrifugal force. The collar and the levers are made so

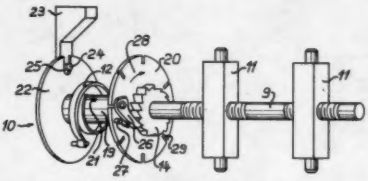
that the said other end of the levers may come in abutment against the collar when the axle starts rotating and thus hold it; the manually operable mechanism comprises means capable of holding the levers in abutment position, this means being displaceable at will to release the levers once the axle has reached the aforesaid predetermined speed.

3,750,487

AUTOMATIC CHAIN OR BELT RE-TENSIONING DEVICE FOR VARIABLE-SPEED DRIVE

Graham Garton King, Lyon, France, assignor to Societe PIV, Villeurbanne, France

Filed Oct. 21, 1971, Ser. No. 191,231
Claims priority, application France, Oct. 22, 1970, 7039151
Int. Cl. F16h *7/08, 55/22*
U.S. Cl. 74—242.8 **5 Claims**



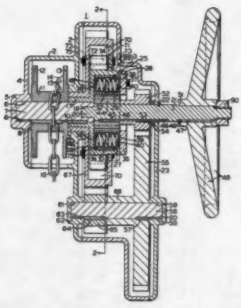
This device for automatically re-tensioning the chain or belt of a variable speed drive or mechanism of the type comprising two pairs of conical disks of which the distance between centers is controlled by means of a pair of levers pivoted about pivot pins of which the relative spacing is adjustable by means of a transverse screw comprises a spiral spring having its outer end attached to a first disk held against motion by suitable means and its inner end anchored to a ring member rigid with another disk provided with a first pair of pawls co-acting with a first ratchet wheel rigid with the re-tensioning screw, this screw being also rigid with another ratchet wheel adapted to be actuated by a second pawl carried by the first disk when said first disk is released from its holding means. (FIG. 4).

3,750,488

HANDBRAKE APPARATUS

Glenn T. McClure, McKeesport, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jan. 17, 1972, Ser. No. 218,179
Int. Cl. F16h *5/54;* **G05g** *1/08*
U.S. Cl. 74—337 **9 Claims**



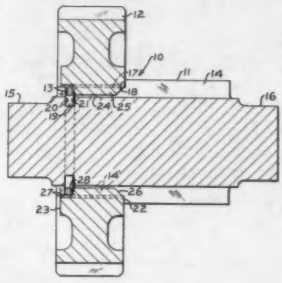
This invention relates to a railway car hand brake apparatus having a spring-biased friction clutch to provide for automatic change from high to low speed drive of a driven member by a drive member upon engagement of the brake shoes with the tread surface of the corresponding wheels in response to the manual rotation of a hand brake wheel. Until the brake shoes engage the tread surface of the wheels, the driven member, which carries thereon a drum upon which a hand brake chain is wound, is driven at fast speed through the friction clutch from the drive member that constitutes a drive shaft and a hand wheel keyed thereto. Slippage of the clutch occurs upon the shoes engaging the tread surface of the wheels, whereupon the drum is driven at a slow speed through a gear train interposed between the driven member to which the drum is keyed and the drive shaft.

3,750,489

COMPOSITE DRIVE ASSEMBLY

Samuel I. Caldwell, Aurora, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed June 7, 1972, Ser. No. 260,491
Int. Cl. F16h *55/04*
U.S. Cl. 74—434 **13 Claims**



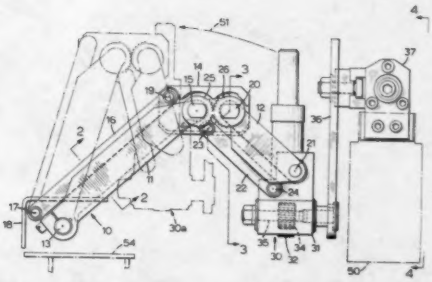
There is disclosed a cluster gear assembled from a pair of separate gear members. The gears are non-rotatably connected by means of a splined connection and retainer means that is operative to eliminate axial movement between the gears. The retaining means includes opposing radial shoulders on each side of one of the gear members, with one shoulder forming a camming surface and an expandable ring engaging the camming surface and one shoulder on the other gear to keep the gear members in a fixed axial position with respect to one another.

3,750,490

MATERIALS HANDLING DEVICE

William Frederick Fisher, Peterborough, Ontario, Canada, assignor to Fisher Gauge Limited, Peterborough, Canada

Filed June 11, 1971, Ser. No. 152,343
Claims priority, application Great Britain, Sept. 11, 1970, 43,593/70
Int. Cl. G05g *1/00*
U.S. Cl. 74—469 **14 Claims**



An articulated device for use with apparatus for handling materials, in which a radial arm on a drive shaft is connected

remote from the drive shaft to a second arm by a member pivotally interconnected to both arms. Intermeshing gears are fixed one to each arm and the member is also connected to a fixed base by means such as a rod parallel to the first arm, whereby the member and the second arm are moved angularly proportional to the angular movement of the first arm.

3,750,491

WINDOW ACTUATING APPARATUS WITH AUXILIARY MANUAL OPERATION

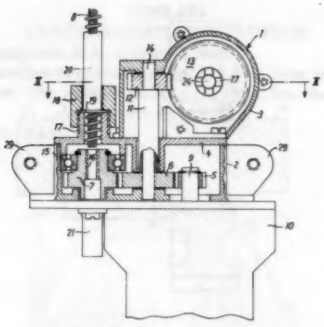
Friedrich Herrmann, Dornigheim ub. Hanau, Germany, assignor to H. T. Golde GmbH, Frankfurt am Main, Germany

Filed June 8, 1971, Ser. No. 151,067

Claims priority, application Germany, June 10, 1970, G 70 21 751.5

Int. Cl. F16h *35/00*

U.S. Cl. 74—625 **5 Claims**



In an electrically operated window actuating device in which power is normally transmitted from a motor to an operating cable through a reducing gear system, a manual emergency drive is provided in which a normally idling gear of the drive is mounted coaxially on the same shaft as the intermediate gear of the reducing gear system. Resilient means normally urge the driving gear of the emergency drive out of engagement with the idling gear. When the manual drive is put into operation, its driving gear actuates the idling gear and the intermediate gear of the reducing gear system thereby causing displacement of the operating cable. The housing for the apparatus is made up of symmetrical parts which can be reversed so as to fit both right and left hand side windows.

3,750,492

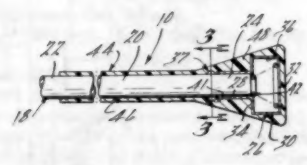
ENERGY ABSORBING SHIFT LEVER

Horace D. Holmes, Jr., Clawson, Mich., assignor to Horace D. Holmes, Sr., Ypsilanti, Mich.

Filed Sept. 20, 1971, Ser. No. 181,723

Int. Cl. G05g *1/04*

U.S. Cl. 74—523 **13 Claims**



A shift lever adapted for mounting on the steering column or the like of an automotive vehicle and including a first end portion designed to be operatively connected to the steering column and a second end portion projecting or protruding outwardly from the column and having energy absorbing means thereon for absorbing at least a portion of the impact energy or force of a person or other object moving into engagement therewith during a vehicular collision or the like.

3,750,493

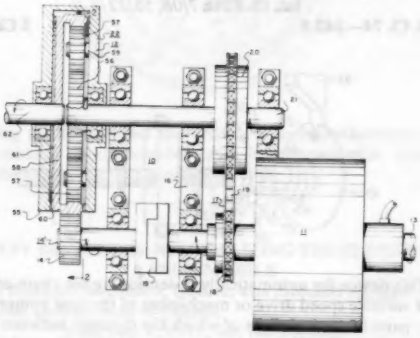
VARIABLE SPEED POWER TRANSMISSION

John R. Allsup, Sr., 1203 Garfield Ave., Yakima, Wash.

Filed Oct. 20, 1971, Ser. No. 190,854

Int. Cl. F16h *47/06*; F16d *35/00*

U.S. Cl. 74—720 **4 Claims**



The present invention comprises: a drum assembly, connected to an input shaft from a suitable torque power source, having a cylindrical chamber carrying fluid, the chamber having fins at intervals on its inner cylindrical wall; a rotor connected to an output shaft, carried in the drum assembly, having a plate perpendicularly disposed to the rotor output shaft, and having a plurality of selectively movable blades disposed at intervals distally from the circumference of the rotor plate; and means for selectively changing the angular relationship of the blades with respect to the rotor plate.

3,750,494

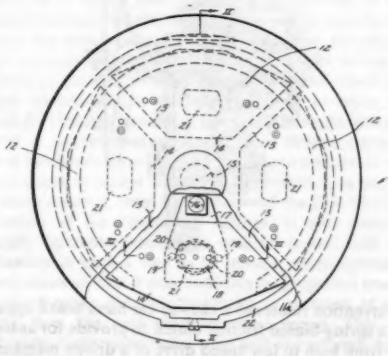
ROTARY INDEXING TABLE

Edwin E. Rice, Ann Arbor, Mich., assignor to Chemotronics International, Inc., Ann Arbor, Mich.

Filed Nov. 5, 1971, Ser. No. 196,128

Int. Cl. B23b *29/32*

U.S. Cl. 74—820 **3 Claims**



An improved rotary indexing table of the Geneva type having an outboard or relatively perimetric locking during dwell

and in which all table forces are isolated during dwell from stress on the drive mechanism. The drive members through an arc of somewhat more than 180° achieve an indexing path act and provide a lock trace path holding the table firm during any dwell stations and wherein the lock is effective through a drive arc somewhat less than 180°

3,750,495

CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

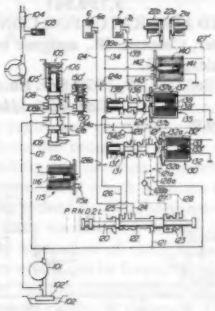
Shin Ito; Seitoku Kubo; Mashanao Hashimoto, and Chihiro Hayashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed June 10, 1971, Ser. No. 151,851

Claims priority, application Japan, Aug. 6, 1970, 45/68858

Int. Cl. B60k *21/00*

U.S. Cl. 74—866 **11 Claims**



A control system for an automatic transmission for an automotive vehicle having at least a torque converter, a planetary gear unit, brake bands and clutches actuated by hydraulic servos, a manual valve, shift valves, line pressure control means, detectors for a plurality of parameters indicative of the operating conditions of the engine, and discriminating circuits for carrying out an automatic shift from one speed ratio to another. In the system, an electrically operated shift shock control valve is provided to make an on-off operation in response to a timing control signal applied from a timing controller so as to alleviate the shift shock occurring during a shift from one gear position to another.

ERRATUM

For Class 81—52.35 see:
Patent No. 3,750,500

3,750,496

DEVICE FOR SPHERICAL TURNING

Alexandr Pavlovich Ivanov, Nevsky prospekt, 139, kv. 76, and Rudolf Alexeevich Romanov, ulitsa Kuibysheva, 21, kv. 54, both of Leningrad, U.S.S.R.

Filed Feb. 24, 1972, Ser. No. 229,005

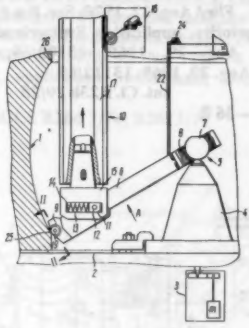
Int. Cl. B23b *5/40*

U.S. Cl. 82—12 **5 Claims**

The device comprises a faceplate with a drive providing for rotation of the faceplate.

In addition, the device comprises a support and a support feed mechanism. The support is made in the form of a lever of the secondclass at one end of which there is arranged a bearing made as a ball-and-socket joint and associated with the faceplate at a point located on the axis of rotation of the faceplate and on the other end of which there is located a tool holder mounting the rotary cup tool.

The tool holder is equipped with means for controlling the degree of rotation of the cup holder in the process of turning



the spherical surface. The spherical surface being turned, the faceplate and the support form a single closed dynamical system.

3,750,497

ADJUSTING MECHANISM FOR RADIALLY MOVABLE TOOLS IN ROTARY TUBULAR TOOL HOLDERS OF SHAVING MACHINES FOR WIRE OR THE LIKE

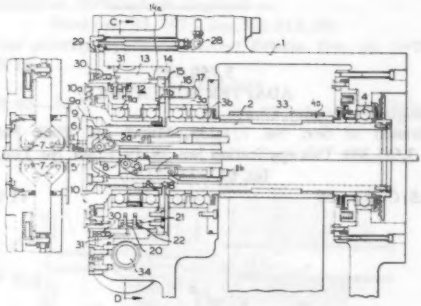
Alfons Goeke; Franz Riedel, and Karl Gustav Weck, all of Solingen, Germany, assignors to Th. Kieserling & Albrecht, Solingen, Germany

Filed Nov. 17, 1971, Ser. No. 199,628

Claims priority, application Germany, Dec. 10, 1970, P 20 60 760.7

Int. Cl. B23b *5/00*

U.S. Cl. 82—20 **10 Claims**



A shaving machine for rolled wire or the like wherein the tubular shaving head carries one or moreshaving tools which are caused to move radially in response to axial movement of an adjusting sleeve which is connected to the inner race of an axially movable antifriction bearing spacedly surrounding the shaving head. The outer race of the bearing is provided with annuli of equidistant plenum chambers which are sealed by a stationary ring-shaped guide surrounding the bearing and having conduits for admission of pressurized fluid into the plenum chambers. The plenum chambers serve as a stabilizing or cushioning means for holding the bearing against radial movements with reference to the frame. The adjusting sleeve is loosely coupled to the shaving head so that it rotates with but need not share vibratory or other stray movements of the shaving head. This insures that such stray movements need not be shared by the tools whose supports are biased against a conical internal surface of the adjusting sleeve.

3,750,498

TOOL HOLDERS FOR MACHINE TOOLS

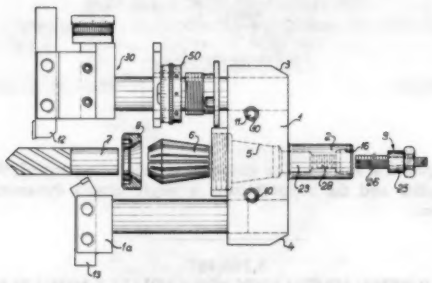
Charles Willen, Villeneuve, Switzerland, assignor to Charles Willen & Cie, Villeneuve, Switzerland

Filed Aug. 27, 1970, Ser. No. 67,370

Claims priority, application Switzerland, Aug. 29, 1969, 13108/69; Aug. 29, 1969, 13109/69; Aug. 29, 1969, 13110/69; Aug. 29, 1969, 13112/69

Int. Cl. B23b *29/26*

U.S. Cl. 82—36 R **9 Claims**



A tool holder for machine tools, such as automatic lathes, includes a body for attachment to the turret of the lathe. A tool support is connected to the body and adjusting means is attached to the tool support for adjusting the position of the tool support relative to the body. The adjusting means includes two relatively rotatable parts and roller means between the parts.

3,750,499

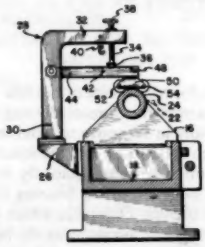
ADAPTER FOR LATHE

Douglas W. Peasley, Cicero, Ill.

Division of Ser. No. 714,235, March 19, 1968, Pat. No. 3,561,300. This application Jan. 28, 1971, Ser. No. 110,557

Int. Cl. B23b *25/00*

U.S. Cl. 82—39 **11 Claims**



A method and apparatus are provided for steadying an elongated horizontally disposed rotating shaft against oscillatory movement during a turning operation. In the apparatus disclosed, downward pressure is applied at spaced points along the shaft through sets of rollers formed of a vibration-damping material.

3,750,500

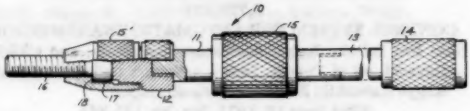
DOWEL PIN EXTRACTOR TOOL

Alton Peterson, 5826 S. Hately Ave., Cudahy, Wis.

Filed Apr. 29, 1971, Ser. No. 138,505

Int. Cl. B25b *19/00, 13/50*

U.S. Cl. 81—52.35 **1 Claim**



A pin extractor tool which may use screw fasteners of various sizes. This device includes a shank portion with a slideable sleeve which a chuck portion having a locking sleeve.

3,750,501

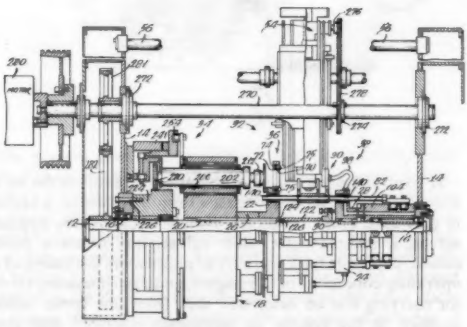
METHOD AND APPAPARATUS FOR CONDITIONING CANS

Stanley J. Miller, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Oct. 19, 1970, Ser. No. 81,872

Int. Cl. B23b *3/04, 5/14*

U.S. Cl. 82—59 R **15 Claims**



A method for trimming salvage edges from container ends by axially inserting a cutter into the open end of a container surrounded by a backing member, shifting the cutter transversely of the longitudinal axis of the container and producing relative rotation between the cutter and container to trim salvage edges from the inside to the outside of the container. The apparatus for trimming salvage edges includes an elongated member rotated about an axis and having a plurality of circumferentially spaced trimming stations. Each of the trimming stations includes a fixed backing member having an opening, a container support movable between first and second positions on one side of the backing member, and a cutter supported eccentrically of a shaft on the opposite side of the backing member with the shaft being movable transversely and axially to temporarily align the cutter with the axis of the opening, and position the cutter inside the container in engagement with the container wall so that rotation of the shaft will trim the salvage edge. The cutter is designed to automatically produce an arcuate surface on the inner edge of the container wall during the cutting operation. Camming members cooperate with the shaft and the container support to move the shaft and container support to the various positions during each cycle of rotation of the elongated member.

ERRATUM

For Class 82—101 see:
Patent No. 3,750,506

3,750,502

APPARATUS FOR THE MANUFACTURE OF PUNCHED CARDS

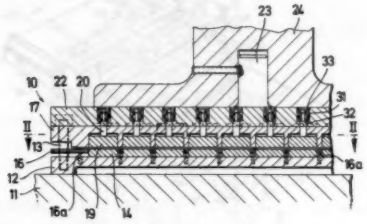
Karlheinz Ball, Lievelingsweg 102-104, Bonn, Germany

Division of Ser. No. 53,252, July 8, 1970. This application Feb. 16, 1972, Ser. No. 226,914

Claims priority, application Germany, July 11, 1969, P 19 35 260.4; Apr. 21, 1970, P 70 14 573.2

Int. Cl. B26f 1/14

U.S. Cl. 83—9 7 Claims



Punched and printed cards are produced in large groups by severing and simultaneous punching of printed plastic sheets in such a way that each card continues to adhere to but is readily separable from the remainder of the sheet. The apparatus for the punching and severing of sheets has two relatively movable sections one of which supports a sheet and the other of which can be moved against the sheet by the ram of a press. The sections have cooperating cutting edges which effect nearly complete separation of cards and one of the sections carries punches which can be forced through the sheet to form punch holes by motion transmitting pins or balls which are shifted in response to closing of the press. The pins or balls are inserted into the one section in accordance with a selected program, such as by copying the distribution of holes in a punched tape which is employed for precoding of the apparatus.

3,750,503

METHOD AND MEANS OF GANG SAW LUBRICATION AND COOLING

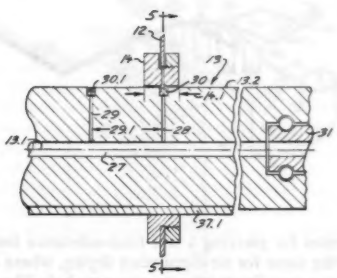
James R. McMillan, Box 17, Lone Butte, British Columbia, Canada

Filed May 4, 1971, Ser. No. 140,232

Claims priority, application Great Britain, May 6, 1970, 21,703/70; Nov. 26, 1970, 56,546/70

Int. Cl. B26d 7/08

U.S. Cl. 83—16 13 Claims



Apparatus and method for cooling and lubricating collar and saw mounted on an edger arbor. Arbor has bore connected with valves mounted in arbor or in keys secured to arbor, valves being opened when in register with collar; valves not in register remain closed. Collar has manifolds and passages communicating with opened valve, and has grooves adjacent saw surfaces. Liquid in arbor bore passes through opened valve into collar, then to both saw surfaces for lubrication after cooling eye of saw and arbor.

3,750,504

METHOD FOR THE UNPACKING OF CYLINDRICAL BODIES INTERCONNECTED GROUPWISE BY BANDS, AND DEVICE FOR THE PERFORMANCE THEREOF

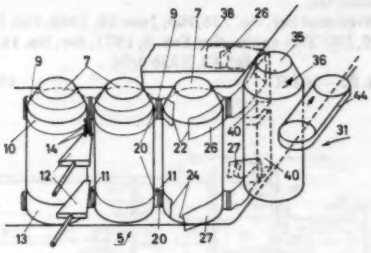
Werner Sidler, Esslingen, Switzerland, assignor to Schweizerische Aluminum AG Corporation, Chippis, Switzerland

Filed Nov. 17, 1971, Ser. No. 199,570

Claims priority, application Switzerland, Dec. 3, 1970, 17864/70

Int. Cl. B26d 7/14; B26f 3/12

U.S. Cl. 83—16 7 Claims



A method for and an apparatus for unpacking a plurality of bodies; the bodies are arranged in a row and are held together by a pair of strips running along the bodies; the strips are welded together between adjacent bodies; the bodies are conveyed to a slide which tensions the strip portion between two bodies by pushing the two bodies apart; one of the two tensioned strip portions is severed and the freed body is rolled off the other strip.

3,750,505

BILLET PRODUCTION

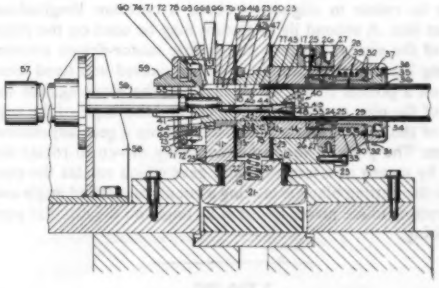
Allan John Organ, Birmingham, and Clifford Gerald Price, Stourbridge, both of England, assignors to The University of Birmingham, Birmingham, England

Filed Dec. 27, 1971, Ser. No. 212,288

Claims priority, application Great Britain, Dec. 30, 1970, 61,815/70

Int. Cl. B26d 3/16

U.S. Cl. 83—54 23 Claims



An apparatus and method for shearing tubular billets, the billet being engaged within apertures in a fixed and a moveable shear blade, the end part of the stock to be sheared off being located in the moveable shear blade and adjacent part of the stock in the fixed shear blade. A mandrel comprising three relatively moveable parts is provided. The free end or location part of the mandrel is engaged in the part of the stock within the fixed shear blade and the mandrel has a location part externally of the stock and fixed relative to a base part of the apparatus, and there being a moveable part engaged in the part of the stock within the moveable blade and engaged with

guide surfaces on the location end support parts. In use, the moveable blade is moved relative to the fixed blade transversely of the tubular stock so that the moveable part of the mandrel moves with the end part of the tube and the end part of the tube and adjacent part of the tube are internally supported by the mandrel.

3,750,506

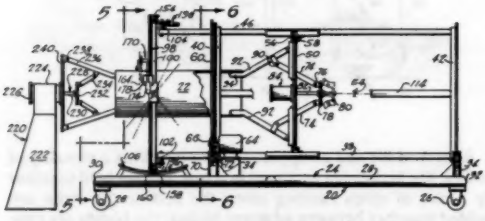
APPARATUS FOR CUTTING ELBOW SECTIONS FROM PIPE

Denver D. Saxon, 4384 Glenwood Pky., Dekalb City nr. Decatur, Ga.

Division of Ser. No. 735,903, June 10, 1968, Pat. No. 3,589,220. This application Feb. 8, 1971, Ser. No. 113,552

Int. Cl. B23b *3/04*

U.S. Cl. 82—101 R **17 Claims**



Bends and elbows for use in larger size pipe, tube or conduit, such as circular and cylindrical sheet metal duct, for the purpose of installation normally come in several different stock sizes and angles and may be made from a series of sections or gores. The present method of making a section at a pre-selected angle is to place the pipe or tube from which the section is to be cut in a jig or fixture in proper alignment for rotation about a constant longitudinal axis, and while the pipe or tubing is rotating bring a cutting blade in cutting contact through the wall of the pipe while sustaining said blade in a movable gimbel or mounting corresponding to the angle desired. One form of the present machine comprises a wheeled base having a pipe or tubing jig thereon comprising adjustable arms which adjust radially from a center with end portions that are inserted inside the end of the tubing to hold same to rotate in alignment about a constant longitudinal center line. A second jig or fixture may be used on the other end of the pipe if desired. An electric motor-driven circular cutting blade with a carbide edge is mounted in a fixed location on a pivotal frame which supports the blade against the wall of the pipe or conduit being cut and the angle of the support of the cutting blade is adjustable from a gear adjustment means. The pipe jig support is rotatably driven to rotate the pipe by means of a large circular gear which rotates the pipe while the cutting blade is making a cut at the desired angle and the cutting blade pivots to cut at an angle on the circular pipe or tubing.

3,750,507

METHOD AND APPARATUS FOR HOLDING SHEET MATERIAL

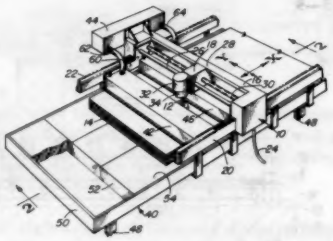
Heinz Joseph Gerber, and David R. Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Dec. 9, 1970, Ser. No. 96,384

Int. Cl. B26d *1/10, 7/02*

U.S. Cl. 83—169 **9 Claims**

A method and apparatus are disclosed for holding sheet material such as woven and non-woven fabrics, plastic or paper while the material is being worked upon by a tool which translates over the sheet material to perform a cutting, plotting or other material processing operation. The apparatus which holds the sheet material in a fixed position during the operation includes a table which supports the material as a single sheet or in a layup and a fluid compartment which is positioned over and exposes the material to pressurized air to force the material onto the supporting surface of the table. While maintaining a region of increased air pressure in the immediate vicinity of the tool, the compartment may be translated along one or two orthogonal directions in conjunction with the movements of the tool. The compartment is open or perforated at the side confronting the material to expose the material to the air under pressure within the compartment. When appropriate, a sheet of impervious material may be overlaid on a layup of the material to increase the effective pressure on each ply of the layup.



3,750,508

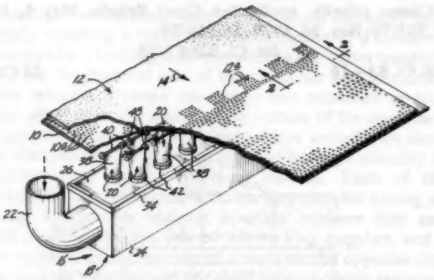
FOAM PIERCING APPARATUS

Thomas R. Miles, Portland, Oreg., assignor to Foamat Foods Corp., Corvallis, Oreg.

Filed Dec. 23, 1971, Ser. No. 211,271

Int. Cl. B26f *3/00*

U.S. Cl. 83—177 **24 Claims**

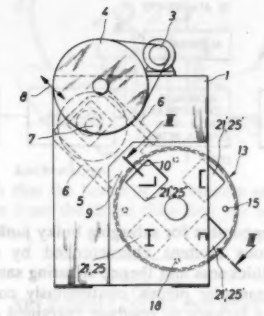


Apparatus for piercing a wet food-substance foam mat to prepare the same for air-circulation drying, where the mat is carried on a traveling perforate conveyor belt. The apparatus includes a plurality of nozzles distributed across the underside of the upper run of the belt having elongated discharge openings that direct laterally overlapping streams of gas upwardly against the belt. The nozzles are mounted for lateral rocking beneath the belt to compensate for transverse waviness in the belt, and are equipped with top rollers that ride against the underside of the belt run-supporting it a predetermined distance from the discharge openings, and operating to sense any such waviness.

3,750,509
PROFILE STEEL CUTTER

Erwin Kruse, Gevelsberg, Germany, assignor to Werner Peddinghaus, Sprockhovel-Hassling-Rausen, Germany

Filed May 17, 1972, Ser. No. 253,980
Int. Cl. B23d 23/00
U.S. Cl. 83—198 13 Claims

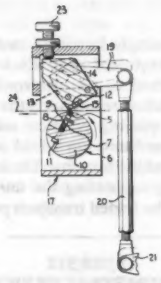


A tool device in which an indexable disc has tool plates in circumferentially spaced positions. A tool actuator is moveable radially to move a tool plate aligned therewith radially inwardly of the disc for a cutting operation. The plate is adapted to support cutting tools to cut a work piece against which the cutting tools are moved by the radially inward movement of the respective tool plate. When a tool plate carried by the disc is rotated away from the actuator, the tool plate can be removed from the disc, while the actuator actuates a different one of the tool plates.

3,750,510
CUTTING APPARATUS FOR PAPER AND LIKE WEBS

Leonard Gabriels, Hollinwood, England, assignor to Frastan (Hollinwood) Limited, Lancashire, England

Filed May 4, 1971, Ser. No. 140,184
Int. Cl. B26d 1/38
U.S. Cl. 83—305 1 Claim

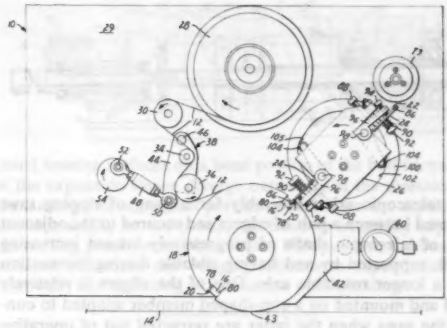


Paper and like material web cutting apparatus including a blade and a cutting knife rotatably mounted so as to enable the webs to be cut when engaged between the knife and the blade, the blade being mounted in such a manner as to be rockable to present a stationary edge during cutting and to enable the blade to be moved to an inoperative position when cutting action is not required.

3,750,511
TAPE SEVERING DEVICE

James W. Toensing, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 2, 1971, Ser. No. 167,924
Int. Cl. B23d 25/12
U.S. Cl. 83—337 2 Claims

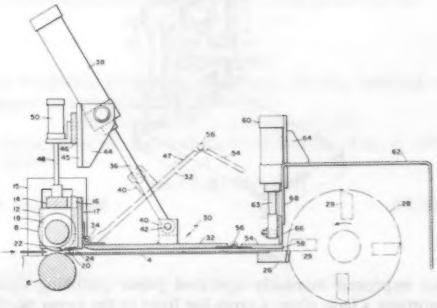


An improvement in a device for severing strip material. The device includes a first wheel supporting a fixed cutting member, and a second wheel supporting a pivotal spring biased cutting member. The wheels are spaced and synchronously driven to bring edges on the cutting members into periodic shearing engagement with strip material fed therebetween during an intersecting path portion for the cutting members. The improvement comprises a cam actuated arm for moving the pivotal cutting member out of engagement with the fixed cutting member subsequent to engagement of their cutting edges and prior to the end of their intersecting path portions.

3,750,512
CUTTING MACHINE

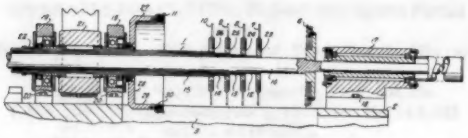
Stanley T. Gotham, Somerset, Mass., and Gerald A. Thurber, Pawtucket, R.I., assignors to Cumberland Engineering Company Inc., Pawtucket, R.I.

Filed Apr. 26, 1972, Ser. No. 247,713
Int. Cl. B23d 25/00
U.S. Cl. 83—356.3 16 Claims



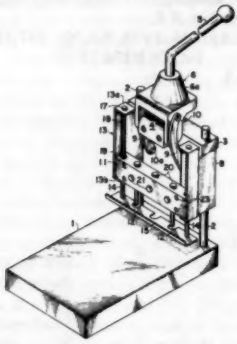
A restraining and hold-down apparatus for use in conjunction with a machine (for cutting thin sheet material) having a feed table, cutting means located at the inner end of the table, and top and bottom feed rolls at the outer end of the table, comprising a main plate hinged at the outer end of the feed table and resiliently held in proximity to the feed table, a pressure pad attached to the inner end of the plate and adjacent the cutting means, the pad being resiliently biased toward the table, and resilient means for biasing the top feed roll toward the bottom feed roll and biasing the rear end of the main plate toward the table simultaneously with the top roll.

3,750,513
TELESCOPING ARBOR ASSEMBLY
Jeff V. Cromeens, Mesquite, Tex., assignor to Industrial Woodworking Machine Co., Inc., Garland, Tex.
Filed May 15, 1972, Ser. No. 253,277
Int. Cl. B27b 5/34
U.S. Cl. 83—425.4 **6 Claims**



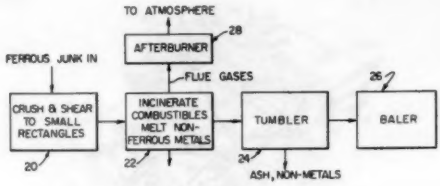
A telescopic arbor assembly for a gang of ripping saws disposed between a pair of edgers and secured to the adjacent ends of telescopic shafts of progressively inward increasing length supported by and having slidable driving connection with a longer rotatable axle. One of the edgers is relatively fixed and mounted on a cup-shaped member adapted to contain the saws when the latter are retracted out of operative position whereby the number of saws exposed to the lumber to be ripped may be varied. The other edger is movable with and/or relative to the saws as well as relative to the relatively fixed edger.

3,750,514
MANUALLY OPERATED PAPER PUNCHING DEVICE
Norihito Tanaka, Osaka-City, Japan, assignor to Lihit Industrial Co., Ltd., Osaka-City, Japan
Filed Oct. 12, 1971, Ser. No. 187,949
Claims priority, application Japan, Jan. 8, 1971, 46/381
Int. Cl. B26d 7/02
U.S. Cl. 83—454 **10 Claims**



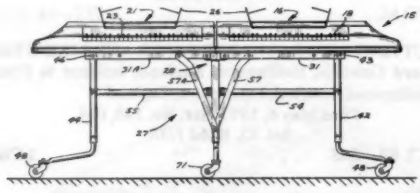
An improved manually operated paper punching device comprising a base plate, a cross bar fixed to the upper portion of at least one guide member secured to the base plate, a slidable member slidably mounted on the said guide member, a handle-carrying member pivotably attached to the fixed cross bar, a curved linking bar rotatably attached at both ends to the handle-carrying member and to the slidable member, and a punching blade holding member secured to the slidable member. This arrangement allows a thick stack of sheets to be punched through precisely at the desired position in a single punching operation with only a small amount of external force without causing local displacement of the sheets in the stack, and this simple structure of the punching device permits its manufacture in large numbers at a low cost.

3,750,515
SHEARING APPARATUS
Fidelis J. Wasinger, 1972 S. Parker Rd., Denver, Colo.
Division of Ser. No. 789,764, Jan. 8, 1969, Pat. No. 3,615,084.
This application Dec. 28, 1970, Ser. No. 102,024
Int. Cl. B23d 17/06
U.S. Cl. 83—599 **3 Claims**



Process and apparatus for salvaging bulky junk material of principally ferrous content characterized by crushing to predetermined thickness and thence shearing same into relatively small rectangular pieces, continuously conveying the pieces through a furnace to combust entrained combustible materials and separate, by melting, non-ferrous metals, resulting in a final ferrous product for subsequent refining which contains a minimum of contaminants to be removed in the refining process. Optionally, undesired combustible air pollutants formed in the furnace are also oxidized before discharge into the atmosphere to thus permit practice of the invention in loci where air pollution is not tolerated.

3,750,516
MULTIPLE KEYBOARD APPARATUS
Percy Dean Olson, Rt. 4, Oakview Dr., Owatonna, Minn.
Filed Dec. 14, 1970, Ser. No. 97,736
Int. Cl. G09b 15/00; G10c 1/00
U.S. Cl. 84—470 **30 Claims**

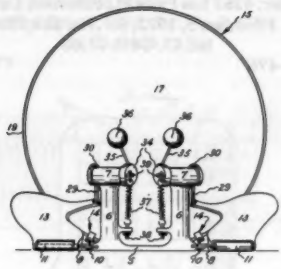


A transportable multiple keyboard instrument having two pivotally connected keyboard units. Each unit has a plurality of keyboards connected to an electronic sound producing system. Folding leg structure supports the keyboard units in a generally horizontal playing position and a folded upright position. Each keyboard unit has a fold open housing for access into the interior of the housing. The leg structure has end legs and a center leg supporting the units in the horizontal playing position and the folded transport position.

3,750,517
DRUM PEDAL DEVICE
Donald Eric Sleishman, 2 Loville Ave., Peakhurst, Sydney, Australia
Filed Dec. 9, 1971, Ser. No. 206,372
Int. Cl. G10d 13/00
U.S. Cl. 84—422 **5 Claims**

A drum double pedal device comprising two beaters mounted in front of the drum, each of the beaters comprising a stem and a head. Two depressible foot pedals are connected

to the beaters by means of a drive transmission. The beaters are mounted for swing movement about axes oriented in a



manner such that the heads of the beaters are farther apart when remote from the drum than they are when in contact with the drum.

3,750,518

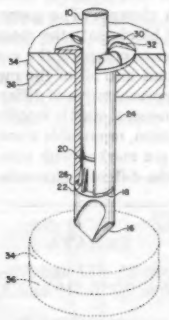
SELF-DRILLING BLIND RIVET

Charles Calvin Rayburn, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 7, 1972, Ser. No. 260,683

Int. Cl. F16b *13/04*

U.S. Cl. 85—68 **9 Claims**



A self-drilling and blind-setting rivet assembly for power tool application to workpiece means, and including a hollow rivet sleeve with an outward radial head flange at the outer end thereof configured for a rotatable driving connection with a power tool and with the inner end portion thereof configured for engagement with cooperative means on an included shank with a drilling head at the inner end thereof whereby torque is transmitted through the rivet sleeve to the drilling head at the end of the shank for causing the drilling head to penetrate the workpiece means in locating the rivet sleeve, and the shank having an area of weakness in rear of the drilling head for fracture thereof upon withdrawal of the shank to collapse and blind set the rivet sleeve in position securing together the workpice means.

3,750,519

ANCHOR BOLT WITH EXPANSION SLEEVE

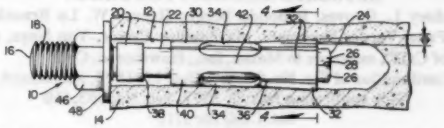
Lester Lerich, Broomfield, Colo., assignor to Wej-It Expansion Products, Inc., Broomfield, Colo.

Filed Oct. 20, 1971, Ser. No. 190,810

Int. Cl. F16b *13/06*

U.S. Cl. 85—77 **2 Claims**

An anchor bolt includes a bolt portion having an expansion sleeve and in one embodiment a spacer collar concentrically mounted thereon in axially aligned abutting relationship with each other. The expansion sleeve has a trailing end with a collar portion and three circumferentially spaced wedging sections extending toward its opposite leading end. The wedging sections are connected to the collar portion by relatively narrow neck portions which flare out into wider wedging portions at the leading end of the sleeve. Longitudinally extending flat-



tened bearing surfaces on a head portion of the bolt forwardly of the expansion sleeve diverge outwardly in the direction of the leading end of the bolt portion so that when the expansion sleeve is axially moved toward the head by an axially adjustable trailing pressure member on the bolt portion, the bearing surfaces will cause the wedging sections to expand circumferentially due to flexing of the narrow neck portions.

3,750,520

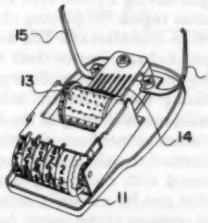
COMBINATION OF MUSICAL BOX AND ODOMETER FOR A BICYCLE

Shiro Inoue, Ageo City, Saitama Prefecture, Japan, assignor to Kabushiki Kaishya Inoue Seisakushyo, Kashiwaza Ageo City, Saitama Prefecture, Japan

Filed Apr. 13, 1972, Ser. No. 243,579

Int. Cl. G10f *1/06*

U.S. Cl. 84—94 C **1 Claim**



An odometer for a bicycle and a musical box are placed in the same casing and are driven by the same power source.

3,750,521

RECORDERS

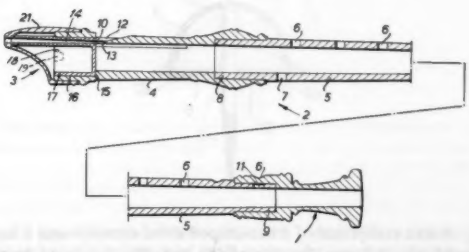
Carl Frederick Dolmetsch, Haselmere, Surrey, England, assignor to Arnold Dolmetsch Limited

Filed Aug. 6, 1971, Ser. No. 169,790

Claims priority, application Great Britain, Aug. 6, 1970, 38,001/70

Int. Cl. G10d *7/00*

U.S. Cl. 84—380 **2 Claims**



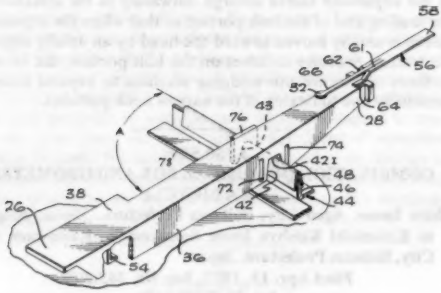
A recorder having a windway which is rigid with a unit to be inserted in the body of the recorder. The unit has a portion of

substantial length arranged to fit into a portion forming part of the body of the recorder. Means are provided for bringing the two portions together to locate the windway angularly relative to the sounding slot.

3,750,522
KEYBOARD ASSEMBLY FOR ORGAN

Sydney L. Groves, Redondo Beach; Harvey W. La Branche, Palos Verdes Peninsula, and Stanley Cutler, Van Nuys, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Continuation of Ser. No. 98,369, Dec. 15, 1970, abandoned. This application Nov. 3, 1972, Ser. No. 303,460
Int. Cl. G10c *3/12*
U.S. Cl. 84—423 5 Claims

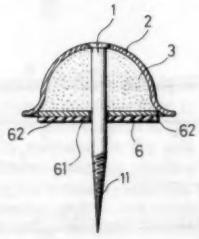


An electronic organ having a piano-type keyboard for playing tones and a button region for playing chords or the like, which is economical to manufacture. The keyboard includes lever-type keys that have recesses in their bottom walls for dropping onto a long thin bar to provide a pivotal mounting, and the organ housing having fingers between groups of twelve keys to limit sideward shifting of the keys. The button region includes a sheet of resilient electrically conductive material with tabs formed therein that are bent to an upward incline, a circuit board with contacts positioned below the tabs, and buttons that can be manually depressed to pushed selected tabs against contacts of the circuit board.

3,750,523
NAIL

Keiichi Fujita, Kawasaki, Japan, assignor to Fujita Kenzo Kogyo Co., Ltd., Kawasaki City, Kanagawa, Japan

Filed Nov. 26, 1971, Ser. No. 202,080
Claims priority, application Japan, Nov. 27, 1970, 45/117939; Jan. 14, 1971, 46/1163
Int. Cl. F16b *35/00*
U.S. Cl. 85—28 2 Claims

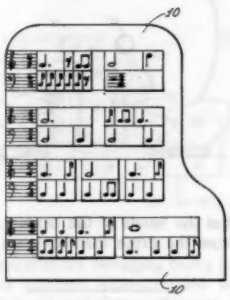


A nail comprised of a bar-shaped drive member and a nail head which forms the top of the pin, the nail head being shaped in the form of a dish which is open toward the end of the pin with the interior of the nail head being filled with a variable water-proof material.

3,750,524
MUSICAL GAME PUZZLE

Aylcen Ito Lee, 38 Erstwild Ct., Palo Alto, Calif., and Jean Marie Yoder, 4262 Los Palos Pl., Palo Alto, Calif.

Filed Jan. 3, 1972, Ser. No. 214,780
Int. Cl. G09b *15/02*
U.S. Cl. 84—476 5 Claims



An improved game puzzle is provided which has particular utility for the instruction of children, and beginner adults, in the fundamentals of the musical rhythmic notation. The game includes a game board with parallel transverse channels formed in its upper surface. Each channel is separated by transverse partitions into lengths representative of various musical measures, so that different musical meters may be represented by each channel. The game puzzle consists in fitting different sized blocks into the measures in the various channels, and in order to complete the game all of the blocks must be correctly fitted into all of the measures. The blocks have different sizes representative of different types of musical notes and rests. The musical staff is inscribed at the bottom of each channel. In addition, removable transparent plastic strips are provided, which are marked with actual beats, and which may be inserted into the different channels.

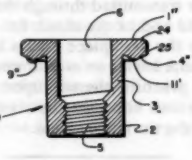
ERRATA

For Classes 85—77 and 85—28 see:
Patents Nos. 3,750,519 and 3,750,523

3,750,525
COLLAPSIBLE THREADED INSERT DEVICE

Kenneth A. Waters, and William E. Waters, both of Weymouth, Mass., assignors to Textron, Inc., Providence, R.I.

Filed May 3, 1971, Ser. No. 139,577
Int. Cl. F16b *13/04*
U.S. Cl. 185—70 9 Claims



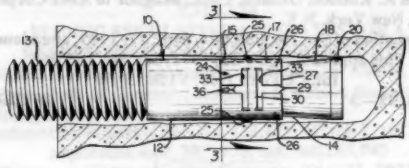
An improved collapsible threaded insert device for securing items to a plate-like workpiece of the type consisting of an annular flange portion integrally attached to an internally threaded, collapsible shank portion. The improvement comprises the addition of various mechanical gripping means formed on the undersurface of the flange to frictionally engage the workpiece when the threaded insert device has been collapsibly secured thereto, thus, increasing the resistance to rotation of said insert within the workpiece.

3,750,526

EXPANSION BOLT WITH UNITARY WEDGE ASSEMBLY

Lester Lerich, Lakewood, Colo., assignor to Wej-it Expansion Products, Inc., Broomfield, Colo.

Filed Feb. 4, 1970, Ser. No. 8,658
Int. Cl. F16b *13/06*
U.S. Cl. 85—79 7 Claims



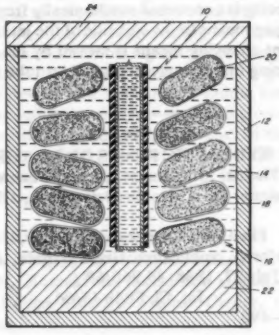
A masonry anchor bolt is characterized by having a unitary wedge assembly which is preformed out of a blank of metal to comprise generally sleeve-like wedge members with a connecting bail between adjacent sides of the wedges so that the wedge assembly may be expanded into surrounding relation to an annular recess on the bolt surface, the connecting bail serving to maintain proper spacing and alignment of the wedge members both with respect to the recess and with respect to one another for selective automatic expansion of the wedge members along an inclined bearing surface into anchored engagement with the wall of the hole.

3,750,527

FAIL-SAFE DEVICE FOR CHEMICALLY ARMED MINES

Robert W. Heinemann, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 11, 1972, Ser. No. 252,168
Int. Cl. C06b *21/02*
U.S. Cl. 86—1 7 Claims



A safety device is provided for inclusion into a dispenser for permeable chemically armed mines which are stored in a desensitized state by immersion in certain halocarbon liquids. A fluid which will permanently sterilize or deactivate the explosive composition of the mine is encapsulated in a sealed frangible container. The container is then partially enclosed in a polymeric material which has the property of swelling while under the influence of certain organic liquids and then forcefully contracting when this influence is absent, thereby breaking the container and permitting the encapsulated material to contact and permanently desensitize the explosive.

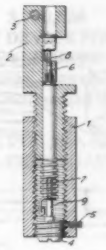
For example, KOH encapsulated in a glass ampoule which is, in turn, enclosed in a tube of buna rubber. This device can be inserted in a dispenser loaded with chemically armed mines containing lead azide and RDX as the explosive, the dispenser is then filled with 1,1,2 trichloro- 1,2,2 trifluoro ethylene, to insure desensitization until activation is desired.

3,750,528

SHOTGUN SHELL PRIMER REBUILDER

James Matthew Boddie, Charleston, S.C.

Filed Mar. 16, 1972, Ser. No. 235,059
Int. Cl. F42b *33/10*
U.S. Cl. 86—37 1 Claim



A small portable hand tool is provided for rebuilding expended shotgun shell primers for use in reloading shotgun shells on the range or in the field. The said tool utilizes a screw/threaded action providing an exact desired pressure for rebuilding expanded shotgun shell primers.

3,750,529

MULTISHOT PORTABLE LAUNCHING APPARATUS

Jerry A. Reed, Placentia; Ronald Van Delden, Shuji U. Maruko, both of Orange; George E. Garner, Placentia; Stanley Ryan, Yorba Linda, Winfred F. Waring, La Mirada, all of Calif.; Jacob Klein, Baltimore; Herman W. Schmidt, Jr., Baldwin, and Simon Friedrich, Columbia, all of Md., assignors to the United States of America as represented by the Secretary of the Army

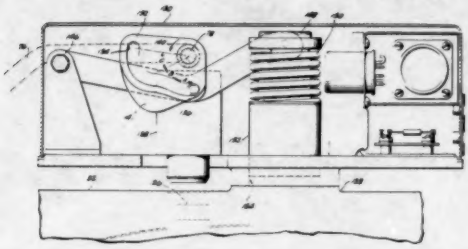
Filed Nov. 2, 1971, Ser. No. 194,838
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 9 Claims

An apparatus and method to launch a projectile containing a viscoelastic solution of high molecular weight polyisobutylene in triethylaluminum to a target site to inflict casualties and/or produce a conflagration; the apparatus being a multiple shot and portable means.

3,750,530
MODULAR AIRBORNE LAUNCHER

Ernest Cords, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 882,986, Dec. 8, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,342
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.807 3 Claims

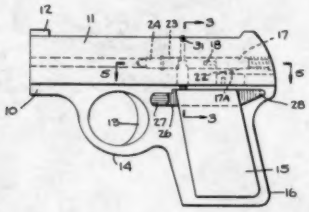


Missile-launching apparatus for mounting on aircraft which enables conversion in the field between several configurations and which facilitates loading of missile containers in cramped locations. The apparatus includes a launching module having a central beam and a missile launcher on either side of the beam, the beam having mounts on its upper end for attachment to an aircraft bomb rack and mounted on its lower end for supporting another almost identical module. Each launcher includes a bulkhead at its front end, a debris tube at its rear end, and a gate at its center for receiving a missile-holding container. The missile container can be installed in a sideward direction by fully opening the gate, or in a front or rearward direction by pivoting open the bulkhead or debris tube. An arming handle is provided which sequentially moves a shear pin in the container to free the missile for launching, and then connects an electrical connector to the missile container.

3,750,531
DUAL PROTECTION SAFETY DEVICE FOR SEMI-AUTOMATIC PISTOL

Robert H. Angell, 514 E. 88th St., New York, N.Y., and Robert S. Frielich, 396 Broome St., New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 179,904
Int. Cl. F41c *17/04*
U.S. Cl. 89—148 4 Claims

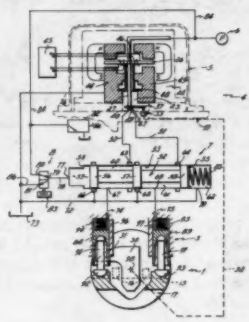


A semi-automatic pistol having a manually-operated safety device affording dual protection whereby, should the standard safety mechanism fail, a secondary safety mechanism acts to prevent firing. The safety device is constituted by a lever pivotally mounted on the receiver of the pistol and cooperating in its operative position with a standard safety mechanism adapted to lock the striker to prevent accidental firing. To afford additional security, the lever is also adapted to cooperate with a safety block assembly having a block which is movable within a recess in the pistol slide communicating with the striker tunnel in a direction transverse to the longitudinal axis of the tunnel. The block in the operative position of the safety lever is disposed to obstruct the tunnel passage, the block being clear of the tunnel in the retracted position of the lever.

3,750,532
SERVOACTUATOR WITH MECHANICAL FEEDBACK

Charles A. Kubilos, Oxnard, Calif., assignor to Abex Corporation, New York, N.Y.

Continuation of Ser. No. 858,604, Sept. 17, 1969, abandoned. This application July 22, 1971, Ser. No. 165,063
Int. Cl. F01b *1/00*; F15b *13/16*
U.S. Cl. 91—3 18 Claims

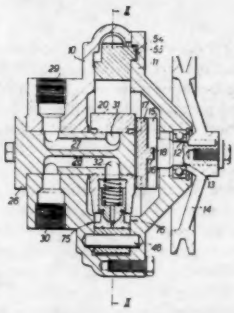


The displacement of a servoactuator such as a variable volume pump or motor is controlled by a servovalve of the jet discharge type having a movable jet tube which is responsive to an electrical input to establish a pressure differential between a pair of fluid lines in accordance with the magnitude of an electrical signal. The pressure differential is applied to operate the opposed hydraulic motors which position the displacement changing means of the pump or motor. A resilient feedback spring is connected mechanically from the displacement changing means to the wet side of the jet tube, and as the displacement changing means is moved by the hydraulic motors, the spring increasingly urges the jet tube toward its null position.

3,750,533
HYDRAULIC PUMPS OR MOTORS

Oswald H. Thoma, St. Clement, Jersey, Channel Islands, England, assignor to Hydraulic-Drive A.G., Glarus, Switzerland

Filed July 7, 1969, Ser. No. 839,458
Claims priority, application Great Britain, July 27, 1968, 35,958/68; July 27, 1968, 35,960/68
Int. Cl. F04b *13/06*
U.S. Cl. 91—498 5 Claims



A radial piston hydraulic pump or motor comprising a rotary cylinder block receiving a number of radial pistons whose

outer ends are connected to bearing pads engaging the inner surface of an annular cam ring, the pads being rectangular in end view and located in an axial direction between inwardly facing shoulders of a surrounding casing, while the rotary cylinder block is free to move axially on a central supporting shaft and is located axially through the pistons and bearing pads.

3,750,534

FLUIDIC REGULATING APPARATUS FOR A REVERSIBLE HYDRAULIC PUMP OR MOTOR

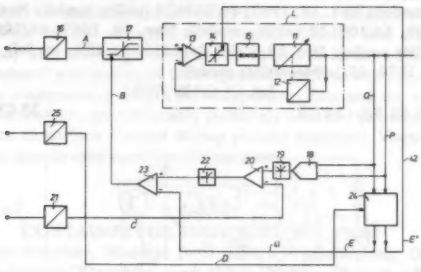
Volkmar Leutner, Hemmingen, and Roman Romes, Friolsheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 232,477, March 7, 1972. This application Apr. 20, 1972, Ser. No. 245,747

Claims priority, application Germany, Apr. 22, 1971, P 21 19 647.4

Int. Cl. F01b *13/04, 25/00*

U.S. Cl. 91—506 **10 Claims**



A regulating apparatus for a reversible hydraulic machine operating as pump or hydraulic motor in both directions of rotation. The machine can be adjusted to different displacement volumes by fluidic actuating means controlled by an output control signal of an additive control amplifier which compares a first control signal representing the actual displaced volume with a second control signal representing the desired displaced volume. The second control signal is generated in a fluidic control device which includes a fluidic limiting device limiting the second control signal, and being controlled by a first fluidic circuit responsive to the product of the actual and desired volume and fluid pressure of the machine, and by a second fluidic circuit responsive to the highest actual fluid pressure of the machine.

3,750,535

ROTARY ACTUATOR

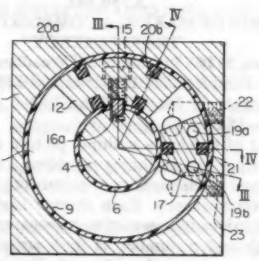
Yasuo Higuchi, Komaki-shi, Aichi-ken, Japan, assignor to Kabushiki Kaisha Chukyo Gijutsu Center, Chujoda-Ku, Tokyo, Japan

Filed Oct. 1, 1971, Ser. No. 185,762

Claims priority, application Japan, Oct. 13, 1970, 45/89342

Int. Cl. F01c *9/00*

U.S. Cl. 92—121 **4 Claims**



In a rotary actuator, seal material of, for example, synthetic resin, is provided on internal periphery of the cylinder and/or external periphery of the shaft, the seal material is axially compressed by a pair of end covers closing the ends of the cylinder, and square packings are provided to the movable and stationary vanes. The seal material and the square packings cooperatively form prefect right angles at corners of contact surfaces within the cylinder to prevent internal leakage of fluid within the cylinder.

3,750,536

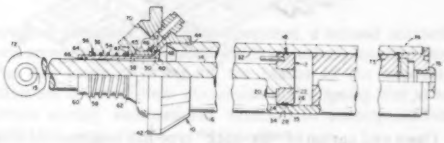
ROD ALIGNMENT DEVICE FOR FLUID POWER CYLINDERS

Floyd K. Walpole, Kaneohe, Hawaii, assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 6, 1971, Ser. No. 187,033

Int. Cl. F16j *1/00*

U.S. Cl. 92—165 **4 Claims**



A piston is mounted in a cylinder and provided with means for allowing axial and/or angular misalignment of a piston rod with respect to the axial center-line of its rigidly mounted cylinder. A rod alignment tube seals the piston in the cylinder without imposing restrictions (or undue added friction) on the piston rod during axial or angular movement thereof.

3,750,537

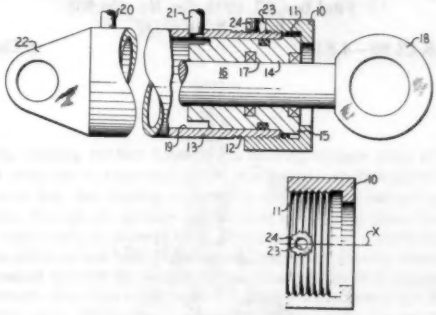
HYDRAULIC CYLINDER WITH SELF-LOCKING END CAP

James C. Goade, Joliet; John A. McDonald, Morton, and Herschel M. Williamson, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 28, 1971, Ser. No. 157,534

Int. Cl. F01b *31/00*

U.S. Cl. 92—165 **3 Claims**



A self-locking, internally threaded end cap for a hydraulic cylinder comprises a tool engaging aperture formed through a sidewall thereof adapted for tightening the end cap in place on the cylinder. A plastic patch completely circumvents the aperture, internally of the end cap, for sealing and locking purposes. The patch is formed by sprinkling a powdered plastic, such as nylon, through a hole formed in a template and onto heated portions of the threads.

3,750,538

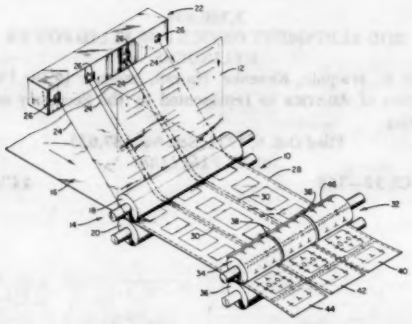
CARTON AND METHOD OF MAKING

Robert E. Confer, 7338 Club House Rd., Boulder, Colo.

Division of Ser. No. 797,180, Feb. 6, 1969, Pat. No. 3,603,501. This application Oct. 5, 1970, Ser. No. 78,226

Int. Cl. B32b *23/10*; **B65d** *5/54*

U.S. Cl. 93—94 R **4 Claims**



Open end carton of "six-pack" type has longitudinal slits on corner edges, one for each can. End slits tend to tear through to end margin, releasing cans. Reinforcing strand surrounds each end of container adjacent to margin, and its tensile strength prevents tearing. Tear strip is cut through strand intermediate top and bottom to permit intentional release. Additional reinforcing strands may be provided to retain each lateral row of cans separately, with multiple tear strips to release each row of cans separately. Carton blanks are made by laminating continuous label web and backing web wide enough for several blanks with longitudinal reinforcing strands between webs and spaced laterally at margins and lines of division of master strip. Latter is divided along lines of division to produce single strips having reinforcing strands along both margins, and then single strips are cut laterally to produce individual carton blanks having lines of reinforcement at two parallel margins.

3,750,539

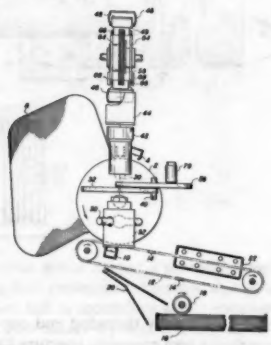
PROJECTION STENCIL ASSEMBLY

Lawrence J. Mason, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1970, Ser. No. 100,988

Int. Cl. B41b *17/32*

U.S. Cl. 95—4.5 R **5 Claims**



A recording system wherein a character disc or the like having transparent light modulating patterns thereon is rotated through an exposure zone so that selected patterns may be projected by the energization of a flash lamp. The projected pattern is collimated and directed to a recording zone through which move lens-mirror units at a constant speed that intercept the projected pattern and focus it onto a photoreceptive recording medium. The patterns are arranged on the character disc in spiralled configurations such that as the disc is rotated the first and last patterns of a spiral move through a fixed exposure zone at different positions relative thereto.

3,750,540

ELECTRIC EXPOSURE CONTROL DEVICE

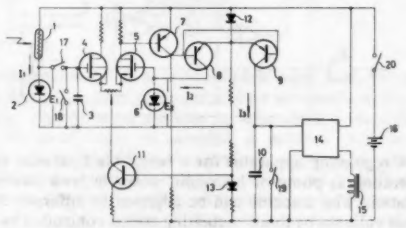
Takeshi Yanagisawa, Kanagawa-ken; Kinzi Tanikoshi, and Yusuke Ono, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Ohta-Ku, Tokyo, Japan

Filed June 9, 1970, Ser. No. 44,670

Claims priority, application Japan, June 13, 1969, 44/46555; Nov. 18, 1969, 44/92428; Dec. 1, 1969, 44/96421; Dec. 19, 1969, 44/102718; Jan. 12, 1970, 45/3407; July 21, 1969, 44/67685 (utility model); July 21, 1969, 44/69121 (utility model); Nov. 18, 1969, 44/109639 (utility model); Nov. 18, 1969, 44/109640 (utility model); Nov. 18, 1969, 44/109641 (utility model); Dec. 19, 1969, 44/121098 (utility model); Feb. 13, 1970, 45/14046 (utility model)

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **33 Claims**



In the exposure control device disclosed, a photo-sensitive element varies its resistance in response to the ambient light, and forms a voltage divider with a logarithmic compression diode. A capacitor senses the voltage across the diode and stores that voltage. A differential amplifier senses the stored voltage and varies the current through a transistor. The latter controls the current through a second compression diode, identical with the first, and connected across the other input of the differential amplifier so that the voltage across the other input equals the capacitor voltage. The transistor current then equals the current through the photo-sensitive elements. A network uses this current value to charge a control capacitor when a camera shutter is opened. Charging takes place at a rate determined by the photosensitive element. A shutter actuator senses when the charge across the control capacitor reaches a given level, and closes the shutter.

3,750,541

METHOD OF MAKING A COMPOSITE PICTURE TRANSPARENCY

John J. Jason, 21165 Escondido St., Woodland Hills, Calif.

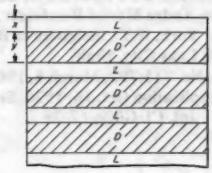
Filed Apr. 26, 1972, Ser. No. 247,871

Int. Cl. G03b *27/02*

U.S. Cl. 95—18 R **11 Claims**

A method of making a multiple picture composite photographic transparency including providing a number of shutter elements equal to the number of pictures to be created on the composite transparency. Each shutter having a number of transparent stripes for permitting transparency film exposure therethrough and a number of dark stripes resisting transparency film exposure therethrough disposed in alternating position with respect to the transparent stripes. A first shutter

member is positioned in indexed surface to surface contact with respect to the unexposed transparency film. A first picture member is projected onto the portions of the transparency film which are exposed through the shutter. The first shutter is then removed and a second shutter is placed in a second indexed position with respect to the transparency film in surface to surface contact therewith. A second picture member is exposed through the second shutter transparent



stripes onto the transparency film. Additional picture members may be similarly projected on the exposed transparency film with the use of additional shutters. Shutter and transparency film indexing means are employed to insure sequential indexed positioning of the respective shutters with respect to the transparency film. The transparency film and the successive shutters are preferably positively retained in intimate surface to surface contact during picture exposure. Vacuum means may be employed for this purpose.

3,750,542

CONTAINER FOR PHOTOGRAPHIC FILM

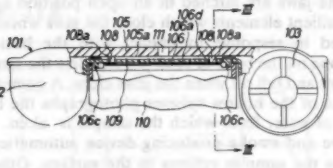
Johann Putscher, Munich; Josef Gersch, Unterhaching; Otto Wiedemann, Starnberg, and Alfred Winkler, Munich, all of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Division of Ser. No. 45,874, June 12, 1970, Pat. No. 3,665,829. This application Dec. 9, 1971, Ser. No. 206,258

Claims priority, application Germany, June 19, 1969, P 19 31 117.2; Aug. 18, 1969, P 19 41 101.9

Int. Cl. G03b *17/28*

U.S. Cl. 95—31 CA **10 Claims**



A container for photographic film has a hollow web connecting a film-supplying chamber with a film-collecting chamber. The front wall of the web has a window which exposes one film frame at a time and such frame is held at a fixed distance from the picture-taking objective of the camera by locating surfaces provided on pins forming part of the rear wall of the web. The pins extend through openings of the front wall of the web and abut against a stop in the camera body.

3,750,543

FOCUS RESPONSIVE EXPOSURE CONTROL SYSTEM

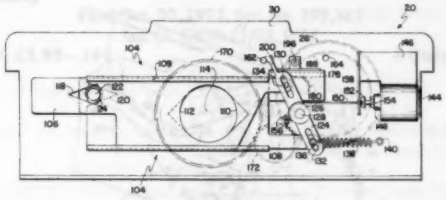
Vaito K. Eloranta, Needham, and Edwin K. Shenk, Littleton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 19, 1971, Ser. No. 135,211

Int. Cl. G03b *7/08, 7/16, 15/05*

U.S. Cl. 95—10 CE **50 Claims**

An exposure control system for a single lens reflex camera. The system incorporates an exposure mechanism having a normally open status for camera viewing and focusing. An exposure cycle is commenced upon energization of a solenoid which drives the exposure mechanism to a closed position. This solenoid is de-energized to commence an exposure interval at which time the blades of the exposure mechanism are driven under spring bias to define a progressively varying exposure aperture. The solenoid is re-energized to terminate an



interval of exposure. For flash operation, a second solenoid driven arrangement is provided which selectively inserts a stop within the locus of travel of the blades of the exposure mechanism to arrest their movement under spring bias at an aperture setting automatically selected in correspondence with the focusing adjustment of the camera.

3,750,544

EXPOSURE CONTROL DEVICE FOR CAMERA

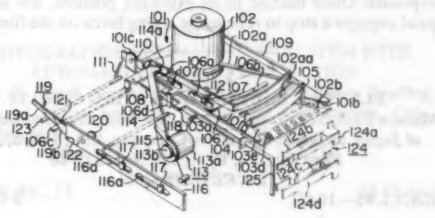
Hideaki Akiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 22, 1971, Ser. No. 191,934

Claims priority, application Japan, Oct. 27, 1970, 45/106076 (utility model); Oct. 27, 1970, 45/106077 (utility model)

Int. Cl. G03b *7/04*

U.S. Cl. 95—10 C **14 Claims**



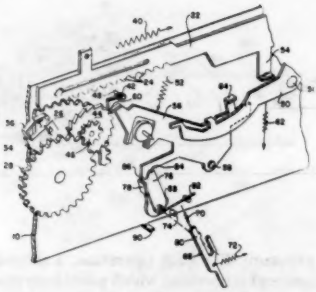
The leading portion beyond the leading arcuate edge of a base plate for an exposure meter or exposure control meter is so bent that the leading end of the pointer may extend upwardly through an arcuate slot formed in the base plate from the undersurface thereof. The detecting arm of a detecting lever slides on the base plate in response to the shutter release operation toward the leading end of the pointer and engages therewith when the brightness of a subject is sufficient for EE photography. Thereafter a pointer retaining plate presses the pointer against the base plate, and depending upon the position of the pointer or the retaining plate, the exposure conditions are determined. When the brightness of a subject is not sufficient for EE photography, the leading end of the pointer is moved away from the path of the detecting arm so that the latter is displaced a greater stroke without being interrupted by the leading end of the pointer, and actuates a switch or switches in an electric circuit to select a slow shutter speed or set both of the shutter and flash cube triggering circuits ready for flash photography.

3,750,545

FILM METERING DEVICE FOR ROLL FILM CAMERAS

David E. Beach, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,629
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM 4 Claims



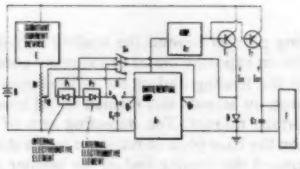
A camera for roll film having perforations at predetermined metering intervals includes a transport mechanism for advancing the film along an exposure plane and a metering mechanism having an active condition for stopping film transport when the film is correctly positioned for exposure and an inactive condition. A film sensing pawl is mounted for movement between a retracted position resting on the film surface, an extended position transversing the film while in a film perforation and a metering position spaced from the extended position in the direction of film advancement. When moved to its metering position by advancing film, the sensing pawl actuates the metering mechanism to disable the transport mechanism. A resilient force is applied to the sensing pawl in a direction urging the pawl from its metering position toward its extended position. The force on the sensing pawl is sufficient to cause the film to move in a direction opposite to the direction of film advancement after the transport mechanism has been disabled to accurately back the film to a position for exposure. Once backed to its extended position, the sensing pawl engages a stop to relieve the spring force on the film.

3,750,546

ELECTRIC SHUTTER OPERATING CIRCUIT

Masaya Fujii, Tokyo, and Osamu Tchihashi, Hamamatsu, both of Japan, assignors to Yashica Company, Ltd., Tokyo, Japan

Filed June 10, 1971, Ser. No. 151,720
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 5 Claims



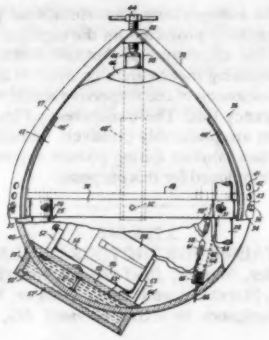
An external electromotive element is disposed in front of the camera. An internal electromotive element is disposed in a position to receive the light transmitted through the lens, for through-the-lens metering. A first capacitor is charged from a source of constant voltage through the internal and external electromotive elements to store a voltage representative of the ratio of externally and internally measured light. A switch, interlocked with the shutter release button connects the output of the first capacitor to the one input of a differential amplifier and connects the external electromotive element, with its polarity reversed, to the second input of the differential amplifier concurrently with the opening of the shutter. A second capacitor is charged in accordance with the output from the differential amplifier and a shutter control circuit is responsive to a predetermined terminal voltage of the second capacitor to close the shutter.

3,750,547

FREE FALL BOTTOM SAMPLER

Thomas N. Walthier; Andre Marcel Rosefelder, and Clifford E. Schatz, all of New York, N.Y., assignors to Bear Creek Mining Company, Salt Lake City, Utah

Division of Ser. No. 711,792, March 8, 1968, Pat. No. 3,572,129. This application Oct. 16, 1970, Ser. No. 81,222
Int. Cl. G03b *17/08*
U.S. Cl. 95—11 UW 15 Claims



A bottom sampler to obtain a sample of the bottom of a body of water. A pair of clam shell jaws are pivotally connected to the base of an upright frame of the sampler. Hollow buoyant spheres are retained within the upright portion of the frame. The jaws are latched in an open position against the bias of resilient elements which close the jaws when the latch is released in response to impact with the bottom. Two weights, one on the back of each jaw stabilize the sampler during descent and fall off when the jaws close. A camera located within one of the hollow spheres photographs the bottom of the body of water from which the sample is taken. A unique signal-flare and smoke producing device automatically actuated when the sampler returns to the surface. Other day or night signal devices such as a radio or flasher can also be used and provision is made to attach such devices to the sampler.

3,750,548

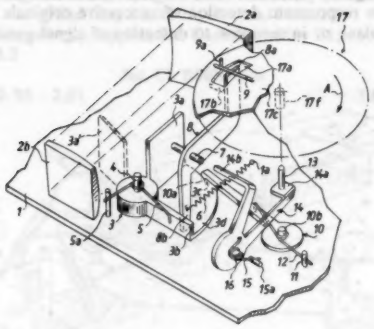
PHOTOGRAPHIC APPARATUS FOR USE WITH PERCUSSIVE FLASH DEVICES

Dieter Engelsmann, Unterhaching, and Horst Karl, Munich, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Aug. 30, 1971, Ser. No. 176,123
Claims priority, application Germany, Aug. 31, 1971, P 20 43 145.2
Int. Cl. G03b *19/02*
U.S. Cl. 95—11 R 17 Claims

A striker which dwells in its energized position and forms part of a percussion flash device is engaged by a sensing lever when the flash device is properly attached to the housing of a camera. The sensing lever thereby allows a pawl to maintain the flag of a signaling lever out of the viewfinder. When the striker leaves its energized position to fire a flash lamp, the sensing lever is free to pivot under the action of a spring and

disengages the pawl from the signaling lever so that the flag moves into the viewfinder under the action of a second spring.



A resetting lever is pivoted by a third spring in response to detachment of the flash device from the housing to thereby expel the flag from the viewfinder by way of the sensing lever.

3,750,549

PHOTOGRAPHIC ROLL FILM CAMERA WITH A MOVABLE LENS TUBE

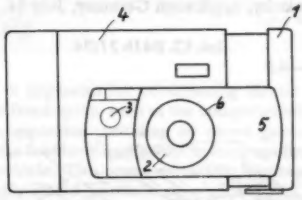
Heinz Waaske, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Continuation-in-part of Ser. No. 150,983, June 8, 1971, abandoned, and a continuation-in-part of Ser. No. 150,984, June 8, 1971, abandoned. This application Oct. 15, 1971, Ser. No. 189,687

Claims priority, application Germany, June 10, 1970, P 20 28 430.4; June 10, 1970, P 20 28 431.5

Int. Cl. G03b *19/02*

U.S. Cl. 95—11 R **6 Claims**



A roll film camera in which the lens tube moves forwardly to a picture-taking position when pictures are to be taken, and rearwardly to a collapsed or compact position for carrying or storage. In the rear position, the lens tube does not project at all beyond the front wall of the camera, but is completely behind the front wall, and the lens tube opening in the front wall is closed by a laterally movable closure member. A single actuating member, preferably in the form of a telescopic part of the camera case or housing, operates through various linkages to uncover the lens tube opening in the front wall of the camera and project the lens tube forwardly through it and lock the lens tube in its forward or picture-taking position, when the actuating member is moved in one direction, and to unlock the lens tube and move it rearwardly to its collapsed position within the body and then close the lens tube opening in the front wall of the body, when the actuating member is moved in the opposite direction.

3,750,550

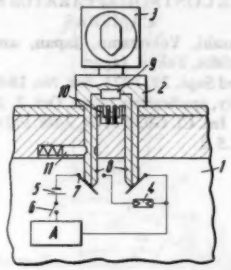
STILL CAMERA WITH AN ELECTRONICALLY CONTROLLED SHUTTER AND A RECEIVER FOR A PHOTO-FLASH DEVICE

Rolf Kasemeier, Heuchelheim, and Karl Gunter Behr, Biebertal, both of Germany, assignors to Minox GmbH Optische Und Feinmechanische Werke, Postfach, Giessen, Germany

Filed Oct. 20, 1972, Ser. No. 299,261

Int. Cl. G03b *15/03, 9/58*

U.S. Cl. 95—11 L **6 Claims**



There is disclosed a still camera with an electronically controlled shutter and a receiver for a photo-flash device. The circuit system in the camera controls the opening time of the shutter in accordance with the incident light and includes for this purpose a light-sensitive resistor and a normally closed switch. The photo-flash device includes a resistor and a circuit component which is insertable into the receiver of the camera. Insertion of this circuit component into the camera receiver device disconnects the light-sensitive resistor in the control circuit on the camera and connects instead the resistor on the flash device to the control system of the camera. The resistor on the flash device has a resistance such that the circuit control system on the camera automatically sets the shutter opening time to the optimal shutter opening time for the flash device.

3,750,551

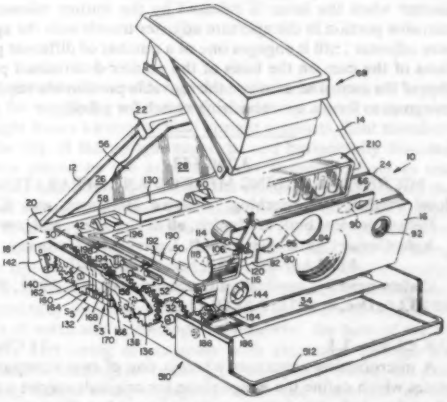
PHOTOGRAPHIC APPARATUS AND SYSTEM WITH AUTOMATIC FILM COVER EJECTION

Edwin H. Land, Cambridge, and Peter P. Carcia, Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1971, Ser. No. 213,318

Int. Cl. G03b *19/10*

U.S. Cl. 95—11 **45 Claims**



A highly automatic photographic camera of a variety having a receiving chamber for accepting a film laden cassette struc-

ture having a dark slide film cover. This dark slide is automatically removed from the camera when the cassette is inserted within the receiving chamber and a loading door is closed, the operator of the camera not having to perform any actuating steps. Switch logic is provided in response to movement of the loading door as well as in response to a counter mechanism of the camera. The invention further incorporates a flash suppression feature which is activated during the dark slide removal operation.

3,750,552

EXPOSURE CONTROL APPARATUS FOR FLASH CAMERAS

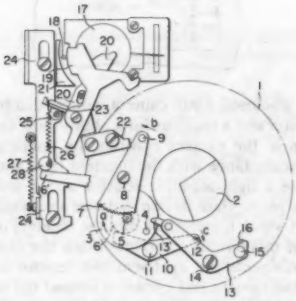
Mutsunobu Yazaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 29, 1971, Ser. No. 184,718

Claims priority, application Japan, Oct. 2, 1970, 45/98261

Int. Cl. G03b *9/70, 7/08, 9/24*

U.S. Cl. 95—11.5 R **7 Claims**



In the disclosed exposure control device for a flash camera, a diaphragm shutter is movable from a normally closed position to a plurality of open positions each of which corresponds to a diaphragm opening of a different size. An indicating pointer projects from an exposure meter and stops at a position corresponding to a measured condition. A shutter release frees a scanning arm from an initial position and allows it to move until the arm is stopped by the pointer at a position determined by the meter. The pointer and arm in effect lock each other in position. The scanning arm carries a stopping cam to a position determined by the pointer. An aperture adjuster in the diaphragm shutter moves in response to the shutter when the latter is released by the shutter release. A movable portion in the aperture adjuster travels with the aperture adjuster until it engages one of a number of different portions of the cam on the basis of the pointer-determined position of the cam. The cam and the movable portion are conductive so as to form a synchronizing switch for a flash.

3,750,553

MICROFILM CODING METHOD AND APPARATUS

Josef Pfeifer, Unterhaching; Wilfried Hofmann, and Karl-Heinz Dietrich, both of Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

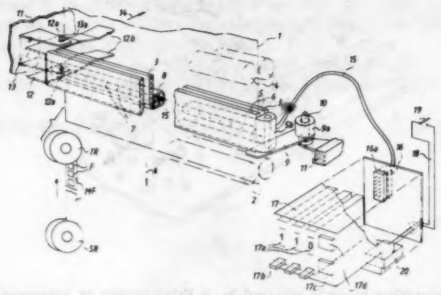
Filed Apr. 12, 1972, Ser. No. 243,201

Claims priority, application Germany, Apr. 17, 1971, P 21 18 732.6; Dec. 4, 1971, P 21 60 211.9

Int. Cl. G03b *17/24*

U.S. Cl. 95—1.1 **11 Claims**

A microfilming apparatus wherein one of two transparent plates which define the image plane for originals carries a row of enclosed electric lamps serving to encode information on microfilm during exposure of successive originals onto successive microfilm frames. The encoded information facilitates the finding of selected microfilm frames. The plates are movable from operative to exposed positions to be accessible for cleaning. The number and distribution of lamps which light up to encode information on microfilm is controlled by a programming unit which can be actuted by hand or automatically, either in response to detection of successive originals in the image plane or in response to detection of signal generating



sheets which are fed into the image plane alternately with successive originals. A detector scans the thickness and/or the conductivity of signal generating sheets and causes the programming unit to change the number and/or distribution of lamps which are lighted simultaneously or substantially simultaneously with the exposure of successive originals onto the microfilm.

3,750,554

PHOTOCOMPOSING MACHINE

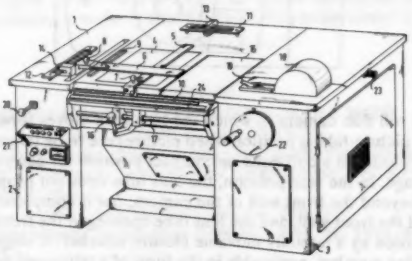
Karl Debus, Karl-Jurgen Debus, both of Bad Homburg v. d. H., and Eberhard Mohr, Langenselbold, all of Germany, assignors to Mergenthaler Linotype GmbH, Frankfurt am Main, Germany

Filed July 15, 1971, Ser. No. 162,999

Claims priority, application Germany, July 16, 1970, P 20 35 313.3

Int. Cl. B41b *21/34*

U.S. Cl. 95—4.5 **10 Claims**



A photocomposing machine especially adapted for display work. The machine employs a film holder that is horizontally disposed and movable along two coordinate axis. A layout sheet viewable by the machine operator can be placed on the upper side of the film holder so that latter can be positioned in accordance with the requirements of the copy to be produced as indicated on the layout sheet.

3,750,555

INSTALLATION FOR PREVENTION OF DRAFT IN THE INTERIOR SPACE OF MOTOR VEHICLES

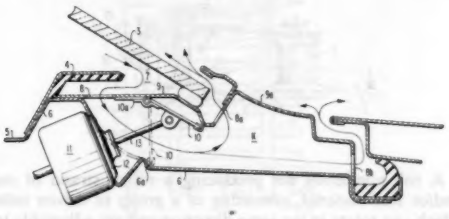
Hans Gotz, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed May 20, 1971, Ser. No. 145,422

Claims priority, application Germany, May 21, 1971, P 20 24 793.2

Int. Cl. B60h *1/24*

U.S. Cl. 98—2.01 **13 Claims**



An installation for preventing a draft in the interior space of motor vehicles equipped with air discharge openings in the vehicle rear section to provide a ventilation, in which the discharge openings are provided with an automatically controllable closure flap.

3,750,556

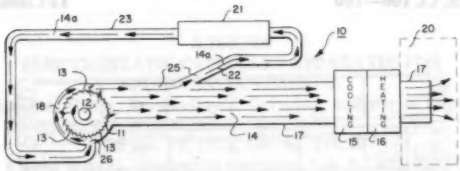
AIR PURIFYING MEANS

Douglas Roy Duke, and Asa M. Pearson, both of Dallas, Tex., assignors to Air Guard Inc., Garland, Tex.

Filed Aug. 23, 1971, Ser. No. 173,824

Int. Cl. B60h *3/00*; F24f *3/12*; A61l *9/00*

U.S. Cl. 98—2.11 **6 Claims**



Disclosed is apparatus for conditioning the air being supplied to a confined space, such as the compartment of a motor vehicle, the apparatus including an ozone generator being disposed as the feedback loop of the heating-cooling system of the motor vehicle. The ozone generator disclosed includes either a single sealed gas tube or a plurality of adjacently disposed sealed tubes.

3,750,557

SYSTEM FOR THE VENTILATION OF BUILDINGS

Jurgen Eberhardt Peill; Alf Gerritse; Miroslav S. Osmera, all of Canning, N.S., Canada, and Christian Karmark Andersen, Naestved, Denmark, assignors to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark

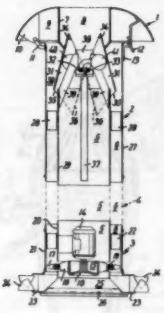
Filed Nov. 9, 1971, Ser. No. 197,128

Claims priority, application Canada, Nov. 16, 1970, 98,213

Int. Cl. F24f *13/00*

U.S. Cl. 98—33 **7 Claims**

A system for the ventilation of buildings, comprising vertical and concentrical exhaust and injection ducts extending from a fan section located in the room to be vented to a roof hood and between said ducts a passage for recirculating part of the exhausted air to the injection duct, damper means in the form of a single unit comprising two adjustable damper members being provided in said exhaust and injection ducts and said passage for controlling the ventilation to any desired condition between full supply of fresh air and full recirculation without supply of fresh air, said damper members being constructed as double-walled elements made of a plastic material, in which a porous insulating material may be provided in the cavity between the walls. In a method for manufacturing such a damper member said member is poured from a plastic foam.



3,750,558

APPARATUS FOR PRODUCING CLEAN AIR

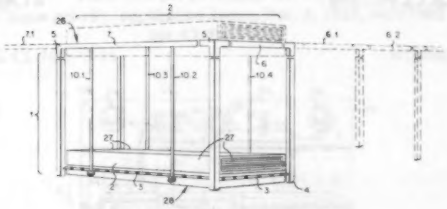
Theodor Jokiel, Dortmund-Brunningshausen, and Karl Bracht, Dortmund, both of Germany, assignors to Ceag Dominit Aktiengesellschaft, Dortmund, Germany

Filed Jan. 31, 1972, Ser. No. 222,235

Claims priority, application Germany, Jan. 29, 1971, P 21 04 234.2

Int. Cl. F24f *1/04*

U.S. Cl. 98—40 D **5 Claims**



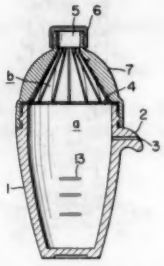
Apparatus for producing clean air includes an air supply unit for supplying a downdraft of inlet air; and a rectangular upright frame having vertical upright supports, joint members at the top of the upright supports, and horizontally disposed beams joined by the joint members perpendicularly to one another and defining a horizontal rectangular opening at the top of the upright frame, the beams being formed with respective rows of vertically extending bores, the air supply unit having a housing formed with a rectangular base and including four upright rectangular walls having a rectangular profile frame blocked out at the corners thereof and including four horizontally projecting flange lengths formed with respective rows of vertically extending bores therein, the base of the air supply unit being displaceable with clearance through the horizontal rectangular opening of the upright frame, the projecting flange being engageable with the underside of the beams, respectively, with the bores formed in the beams in alignment with the bores formed in the projecting flange lengths.

3,750,559

COFFEE MAKING BOTTLE AND METHOD FOR MAKING SAME

Hideo Wakabayashi, 34-6, 5-chome, Yoyogi, Shibuya-ku, Tokyo, Japan

Filed Oct. 26, 1971, Ser. No. 192,225
Int. Cl. A47j *31/00*
U.S. Cl. 99—279 **2 Claims**



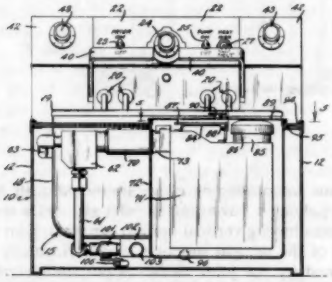
Coffee making bottle consisting of two separated parts of upper and lower members, each being partitioned by a filter paper to form a coffee extraction chamber and filtration chamber.

3,750,560

DEEP FAT FRYER

Brandon M. Holmes, Nashville, Tenn., assignor to Progressive Products Corporation, Nashville, Tenn.

Filed Sept. 3, 1971, Ser. No. 177,549
Int. Cl. A47j *37/12*
U.S. Cl. 99—408 **6 Claims**



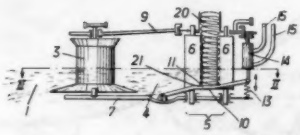
Apparatus for cooking foods by immersion in a cooking medium maintained at a predetermined temperature and in which the liquid cooking medium is constantly circulated in a manner that particulate matter is removed from the surface and from the bottom of the cooking vessel and such particulate matter is removed from the circulating cooking medium without interrupting the flow of such medium. The particulate matter separated from the cooking medium is discharged into a collection receptacle which can be removed when desired without draining the cooking medium from the vessel.

3,750,561

ROLL CONDENSER FOR PRODUCING A ROLLED STRAND OF STALK AND/OR LEAF MATERIAL

Franz Wieneke, No. 14, August-Lange-Strasse, Bovenden, Germany

Filed July 1, 1971, Ser. No. 158,833
Claims priority, application Germany, July 4, 1970, P 20 33 275.6
Int. Cl. B30b *3/04*
U.S. Cl. 100—89 **8 Claims**



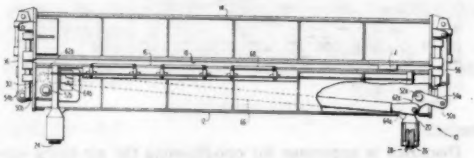
A roll condenser for producing a rolled strand of stalk and/or leaf material, consisting of a group of driven rollers which can rotate in the same direction and are adjustable to a certain angle in relation to one another, the said roll condenser possessing a regulating device arranged automatically to regulate said angle of tilt and constructed so as to adjust said angle of tilt in inverse proportion to the degree in which the rolling compartment has been emptied, while a measuring feeler measuring the said degree and belonging to the regulating device is situated in that zone of the rolling compartment from which it begins to empty when the feed of material thereto is interrupted.

3,750,562

FLUID-ACTUATED PRESS

John Calvin Jureit, Coral Gables, Fla., assignor to Automated Building Components, Inc., Miami, Fla.

Filed Oct. 20, 1971, Ser. No. 190,724
Int. Cl. B30b *1/32*
U.S. Cl. 100—100 **12 Claims**



The press includes a base structure carrying a press platen and an upper floating head carrying a press platen, the floating head being movable toward and away from the base. A fluid-actuated cylinder is provided at each end of the press to raise and lower the head. A load transfer assembly interconnects opposite ends of the press and includes a transfer bar pivotally connected at opposite ends to bellcranks at opposite ends of the base. Rods at opposite ends of the press connect between the bellcranks and head. When the press is subjected to asymmetrical loadings, the load transfer apparatus transfers a portion of the force applied to the head by the cylinder at one end of the press to the head at the opposite end of the press.

3,750,563

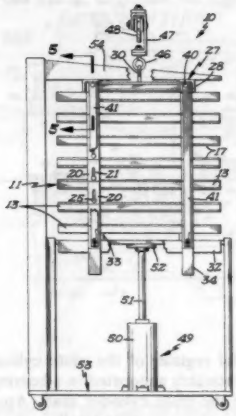
HAM PRESS OPERATOR

John A. Tonjum, Austin, Minn., assignor to Geo. A. Hormel Co., Austin, Minn.

Filed Nov. 11, 1971, Ser. No. 197,695
Int. Cl. B30b *7/02*
U.S. Cl. 100—194 **3 Claims**

A ham press for compressing hams during the cooking and smoking thereof comprises a plurality of similar racks inter-

connected together by pins and slotted coupling elements. The racks are shiftable between an open position and a closed pressing position wherein the hams are compressed between adjacent racks. Each rack includes a frame having perforated upper and lower press members which engage the hams to be



pressed. Smoke may freely circulate between the upper and lower press members while the racks are in pressing condition thereby permitting smoking and heating while the hams are being pressed. The diamond shaped configuration of perforations in the press members of each rack impart the desirable surface ornamentation to the hams being pressed.

3,750,564

ELECTROSTATIC CAPILLARY APPARATUS FOR PRODUCING AN IMPRINT

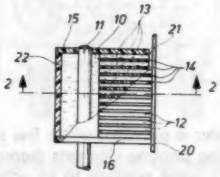
Hubertus Bettin, Braunschweig, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Jan. 19, 1972, Ser. No. 219,107

Claims priority, application Germany, Feb. 5, 1971, P 21 05 373.6

Int. Cl. G01d *15/18*; H01v *7/00*

U.S. Cl. 101—1 **8 Claims**



A method of and an apparatus for producing an imprint on a recording carrier by providing capillary media, supplying writing liquid in the capillary media, positioning a recording carrier in close spaced proximity to the capillary media, and causing displacement forces to occur by the application of a voltage across the capillary media. The steps result in the electrokinetic movement and discharge of the writing fluid from the capillary media onto the recording carrier.

3,750,565

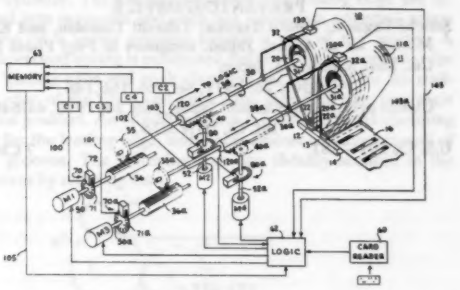
PRINT-SETTING APPARATUS

David W. Hubbard, Stamford, and Alton B. Eckert, Jr., Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 10, 1972, Ser. No. 216,668

Int. Cl. B41j *1/20*

U.S. Cl. 101—93 C **3 Claims**



Print-setting apparatus of the kind which employs a number of separately drivable character-bearing belts in side-by-side relation is provided with electrically operated stepping means for positioning the various belts in desired locations. Slotted code wheels having precise driving and structural relationships with the driving system for the belt-positioning apparatus are employed for counting the incremental movements of that apparatus. Results of the counting are used for monitoring and controlling the functioning of the print-setting apparatus as a whole.

3,750,566

DEVICE FOR CONTROLLING THE FEEDING OF COPY SHEETS TO A SMALL OFFSET PRINTING MACHINE

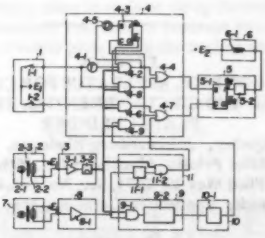
Toshiya Ogawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 27, 1970, Ser. No. 93,164

Claims priority, application Japan, Dec. 3, 1969, 44/97408

Int. Cl. B41f *9/00*

U.S. Cl. 101—144 **8 Claims**



The device has means producing a synchronizing pulse in synchronism with rotation of a cylinder of the printing machine and responsive to completion of each revolution of the cylinder, timing means producing a time signal responsive to completion of the inking time of the printing machine, and a push button switch operable to initiate feeding of the sheets. A logic circuit is operable, responsive to simultaneous receipt of a time signal, operation of such push button and receipt of a synchronizing pulse, to effect operation of a lever for feeding copy sheets to the printing machine under the control of a feed cam on a cylinder of the machine. A "stop feeding" signal is produced responsive to printing of a preset number of sheets and conicident with a synchronizing pulse, or respon-

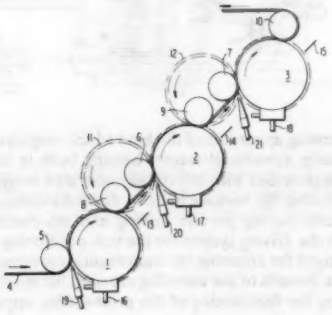
sive to a lack of synchronism of the sheet feeding and the synchronizing pulse, or responsive to operation of a "stop" push button switch coincident with a synchronizing pulse. The synchronism is checked by a checking circuit including means producing a signal responsive to the termination of feeding of each individual sheet.

3,750,567

DYE TRANSFER APPARATUS WITH STAIN PREVENTING DEVICE

Seiichi Taguchi; Sigeru Tezuka; Takeshi Tomotsu, and Eiichi Mizuki, all of Asaka, Japan, assignors to Fugi Photo Film Co., Ltd., Kanagawa, Japan

Filed July 26, 1971, Ser. No. 166,148
Claims priority, application Japan, July 24, 1970, 44/64904
Int. Cl. B41f *5/16*
U.S. Cl. 101—181 **7 Claims**



A dye transfer apparatus having a stain preventing device. The apparatus comprises a rotatable plate cylinder on which a matrix is mounted, a dye solution applying device for applying a dye solution on the matrix, a washing liquid supplying device positioned downstream of the dye solution applying device, a squeeze roller positioned downstream of the washing liquid supplying device for urging a receiving material into contact with the matrix, and a washing liquid removing device having a head with a narrow tip end disposed closely adjacent the nip of the plate cylinder and the squeeze roller to remove washing liquid containing dye from the surface of the receiving material.

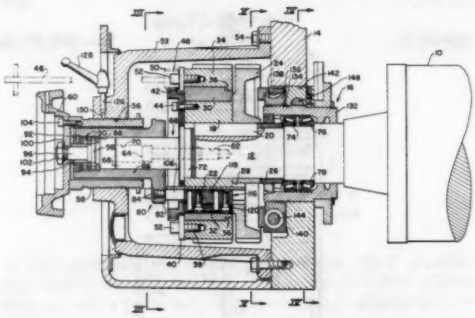
3,750,568

REGISTER CONTROL APPARATUS FOR CONTROLLING BOTH AXIAL AND CIRCUMFERENTIAL REGISTER OF A PLATE CYLINDER

Willie Weisgerber, Johannisberg/Rheingau, Germany, assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed May 20, 1971, Ser. No. 145,446
Claims priority, application Germany, May 22, 1970, P 20 24 937.0
Int. Cl. B41f *13/24*
U.S. Cl. 101—248 **10 Claims**

The register control apparatus includes a ring member coaxially positioned on a hub portion of the plate cylinder shaft. A drive gear is coaxially positioned on the ring member and drivingly connected thereto. The hub, ring, and drive gear are axially fixed on the plate cylinder shaft and the ring member is rotatable relative to the hub member by means of a circumferential register adjusting apparatus that includes a pair of spline members slidable longitudinally in slots of the hub member and a pair of key members positioned in slots in the ring member. The key members have an upper key portion extending into slots in the slidable splines. The slots and key portion extend angularly relative to the shaft periphery at the same helix angle as the helical gear teeth of the drive gear and in the opposite direction. The lower portion of the key member has arcuate side walls that mate with arcuate side walls of the longitudinal slots in the ring. By axially moving the splines relative to the plate cylinder shaft the hub and plate cylinder are rotated relative to the drive gear to thus change



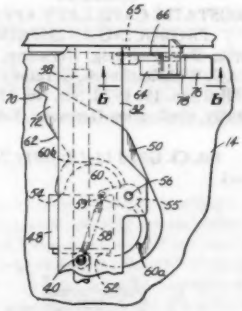
the circumferential register of the plate cylinder. The plate cylinder shaft is rotatably supported in a bearing housing that is axially fixed to the plate cylinder shaft. Apparatus is provided to move the bearing housing axially in the press frame to thus move the cylinder axially and adjust the side register.

3,750,569

SPRING BIASED AXIALLY SHIFTING PLATEN ROLLER IN A TRAVELING CYLINDER IMPRINTER

Walter E. Janik, Willoughby, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Jan. 10, 1972, Ser. No. 216,549
Int. Cl. B41f *3/02*
U.S. Cl. 101—269 **5 Claims**

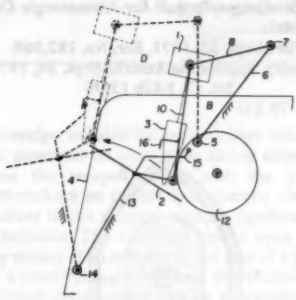


A data recorder is provided which has a carriage movable over a bed having printing elements thereon. The carriage is movable from a home position to an actuated position and returned to the home position to perform a printing function. The carriage mounts a roller platen which is axially shiftable, in response to movement of the carriage, to two different positions to thereby travel in two separate parallel paths of travel. A yoke is provided to shift the platen betwwen the two positions. The yoke is moved to shift the platen in one direction by movement of the carriage through a stroke past the printing elements and the yoke is releasably latched in this position. At the other end of the carriage stroke the latch is released and biasing means causes the yoke to shift the platen to its other position.

3,750,570
DEVICE FOR CLEANING COLOR STIRRER AND COLOR CHESTS OF PRINTING MACHINES

Hans Johne, Radebeul, and Eberhard Graupner, Freital, both of Germany, assignors to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed Apr. 2, 1971, Ser. No. 130,751
Int. Cl. B41f *31/06*
U.S. Cl. 101—364 **4 Claims**

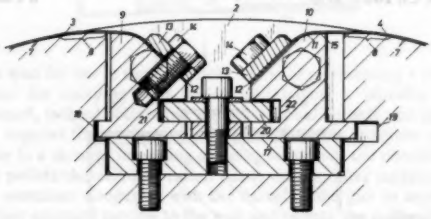


The color stirrer unit and also the color chest unit of a printing machine are tiltably linked for positioning either in operative relationship or in positions for easy cleaning of the stirrer, or of the chest, or of the color ductor which normally dips into the chest, or of all of these devices. For these purposes the respective linkages are interconnected to allow free access to each unit and also to facilitate re-establishment of the operative relationship between these units.

3,750,571
PLATE CLAMPING DEVICE FOR INTAGLIO PRINTING PRESSES

Albrecht Germann, Wurzburg, Germany, assignor to Schnellpreasenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Aug. 3, 1971, Ser. No. 168,541
Claims priority, application Germany, Feb. 6, 1971, P 21 05 633.7
Int. Cl. B41f *27/10, 27/12*
U.S. Cl. 101—415.1 **4 Claims**

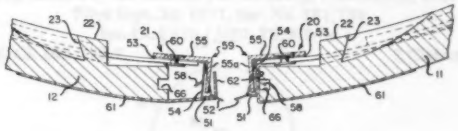


A clamping system is provided for tightening printing plates on a form cylinder of an intaglio printing press to avoid plate ruptures. Adjacent the sides of the grooves in the cylinder in which the leading and trailing ends of the plates are clamped, the cylinder is formed with a convex transition curve over which the ends of the plate are led and this transition curve has a curvature which curves the plate such that it does not exceed the elastic limit of the plate and the plate fits snugly around the cylinder surface, thus the tension force that is applied to the plate end does not act on this transition portion of the plate such that it deforms it. Clamping bars for the leading and trailing ends of the plates are slidably mounted in the grooves. There is a clamping strip having screws mounting it on the clamping bar and under which the end of the plate is clamped to the bar. Each clamping bar has a convexly curved surface portion in its upper portion joining at its upper end with a flat surface portion thereon lying in a plane extending tangentially to the radius of curvature of the convexly curved portion and adjacent the convex curved portion on the cylinder so as to receive and direct the end of the printing plate into the cylinder groove and a portion to lie in the plane as a straight line portion as it leaves the transition portion of the cylinder. The clamping bars for the trailing edge are divided into segments and each has a pressure adjusting screw acting on a spring pressing against a wall of the groove. A compression spring is positioned between the clamping bar for the leading edge and each clamping bar segment for the trailing edge of the plate and moves the clamping bars into their initial position. An adjusting screw is mounted in the clamping bar for the leading edge, and it acts against an adjacent wall of the grooves. The clamping bars are slidably secured in the grooves by securing bars.

3,750,572
PRINTING PLATE CYLINDER SADDLE

Gordon Etchell, Downers Grove, and Bohdan Washchynsky, Westchester, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 12, 1972, Ser. No. 261,876
Int. Cl. B41f *27/06, 27/14*
U.S. Cl. 101—415.1 **5 Claims**



A printing plate cylinder saddle is provided with construction features for mounting on a printing plate cylinder and for attaching a thin, flexible printing plate. Identical plate engaging assemblies are provided at each end of the saddle and are selectively operable to releasably clamp and interlock the lead edge of the flexible plate in register along the lead edge of the saddle or to interlock and exert a constant tension upon the tail edge of the flexible plate along the trailing edge of the saddle.

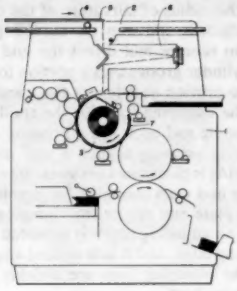
3,750,573
APPARATUS FOR ATTACHING A PRINTING FOIL OR MASTER TO THE CYLINDER OF A PRINTING MACHINE

Wolfgang Guenter Haeusler, Koenigslutter, and Horst Herok, Helmstedt, both of Germany, assignors to Roto-Werke GmbH, Koenigslutter, Germany

Filed Sept. 12, 1972, Ser. No. 288,252
Claims priority, application Germany, Sept. 15, 1971, P 21 46 037.7
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 **12 Claims**

The present apparatus greatly facilitates the handling of the printing foil or sheet material of which a printing master is produced for use in printing machines such as office offset machines. The foil handling means include a first pair of rollers arranged inside a hollow foil cylinder for paying out a length of foil. First clamping means are provided for securing the leading edge of the foil to said cylinder. Second clamping

means are provided for clamping down a portion of the foil which after severing becomes the trailing edge of the preced-

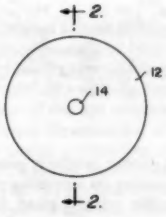


ing master and the leading edge of the next following master. For this purpose the second clamping means are combined with severing means.

3,750,574
ILLUMINATING ROUND HAVING DUAL RANGE CAPABILITY

Carl W. Lohkamp, Bloomfield, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1972, Ser. No. 230,539
Int. Cl. F42b *13/38*
U.S. Cl. 102—34.1 **1 Claim**

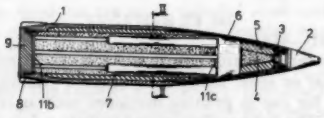


An illuminating round having propulsion means and a flare composition, and means for deploying a parachute upon ignition of the flare composition. The forward end of the round is configured for low drag and means are provided for attaching an auxiliary part which provides for high drag during propulsion of the round.

3,750,575
SPIN-STABILIZED PROJECTILE

Konrad Heede, Neuss, and Peter Bender, Dusseldorf, both of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Aug. 26, 1971, Ser. No. 175,054
Int. Cl. F42b *13/50*
U.S. Cl. 102—69 **6 Claims**

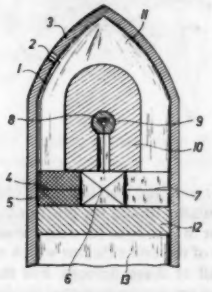


A spin-stabilized projectile which comprises a casing having a front nose fuse connected with an ejection charge. A thrust plate is disposed at the rear of the ejection charge. A cluster includes at least one stick which is disposed between the thrust plate and the base, and clamping means are provided for holding together the cluster at its rear end and adapted to hold the cluster until leaving the casing.

3,750,576
ROCKET WITH THERMAL CONTROL FOR INFLUENCING THE WEATHER

Leopold Balcarczyk, Vienna, Austria, assignor to Osterreichische Studiengesellschaft fur Atomenergie Ges. m.b.H., Vienna, Austria

Filed Sept. 23, 1971, Ser. No. 182,989
Claims priority, application Austria, Sept. 24, 1970, 862970
Int. Cl. F42b *13/00*
U.S. Cl. 102—70.2 G **3 Claims**

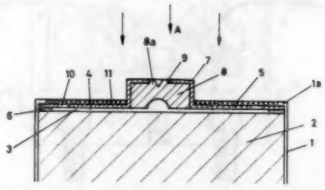


A rocket for influencing the weather has an explosive charge and the substance to be atomized in its head portion. A thermocouple is provided one soldered junction of which is provided at the exterior of the rocket and the other soldered junction is kept on a constant temperature.

3,750,577
PROJECTILE CARRIED IGNITABLE DEVICE HAVING DELAYED, LARGE SURFACE IGNITION

Bjorn Herman Olof Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed May 31, 1972, Ser. No. 258,168
Claims priority, application Sweden, June 21, 1971, 8002/71
Int. Cl. F42b *13/40*
U.S. Cl. 102—37.6 **8 Claims**



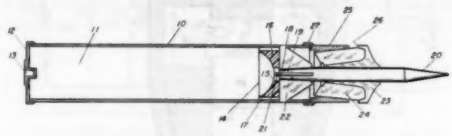
The main charge of a flare is delayed from being ignited, due to hot gases directed toward a surface of said main charge, by a member covering said surface. The covering member defines a plurality of flare outlet openings communicating with a gap formed between said covering member and said flare surface, and also defines a cavity containing a priming charge, or a priming charge and a delayed charge, exposed for ignition by said hot gases and operative, after a time delay, to ignite the flare over a large surface area via said gap. A further member temporarily covers said plurality of flare outlet openings, said further member being removed to expose said outlet openings upon sudden deceleration of the flare, or due to hot gases produced by ignition of said flare surface.

3,750,578

EXPELLABLE CARTRIDGE CASE

Raymond S. Blajda, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1972, Ser. No. 215,364
Int. Cl. F42b *13/16*
U.S. Cl. 102—38 6 Claims



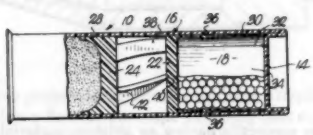
Novel cartridge, suitable for use with high velocity anti-tank projectiles, possesses an open tube casing adapted to be expelled from the weapon along with the projectile and separated therefrom on muzzle exit, thereby eliminating dangerous residues in the weapon without significantly affecting projectile ballistics. The cartridge has an open ended casing attached by means of an adapter to the rear of a projectile provided with a tracer composition and an obturating band. The casing is closed at its breech end by a ventable cap and the adapter at the other end is open so that the propellant gases can pressurize the breech area and entire gun area behind the obturator band and expel the projectile. The adapter also permits the propellant gases to ignite the tracer composition so as to burn and sever the attachment to the projectile. The attachment remains intact while the cartridge is in the gun barrel but is severed after it leaves the muzzle, whereby the projectile is separated from the adapter and spent casing debris in the area near the front of the weapon and no residue, fragments, etc. are left behind in the weapon.

3,750,579

SHOTGUN SHELL WAD

Larry D. Bellington, 4801 Blue Ridge, Kansas City, Mo.

Filed Sept. 9, 1971, Ser. No. 179,106
Int. Cl. F42b *7/08*
U.S. Cl. 102—95 8 Claims



A wad for use in shotgun shells or the like presenting a container for carrying shot pellets and having a plurality of inclined, twisted collapsible supports providing only non-central support for the container. Upon firing, the supports collapse in a manner imparting spinning motion to the container and pellets therein, and raised beads on the outer surface of the container cooperate with the barrel of the gun to impart further spinning motion to the wad and pellets, the collapsible supports and raised beads being relatively oppositely inclined so as to compound these spinning motions.

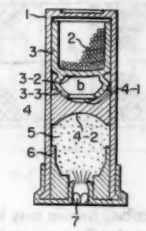
3,750,580

WADS FOR CHARGING SHOT OF SHOT GUN

Junichi Nomura, and Takemitsu Andoo, both of Ohita, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1970, Ser. No. 89,306
Int. Cl. F42b *7/08*
U.S. Cl. 102—42 C 8 Claims

The present invention relates to improvements in shot-cups and cup-wads used for shot gun cartridges, and, more particularly, it relates to a combination of plastic wads for shot gun cartridges comprising a shot-cup for retaining shot pellets provided with a unitarily molded lower cylindrical skirt portion



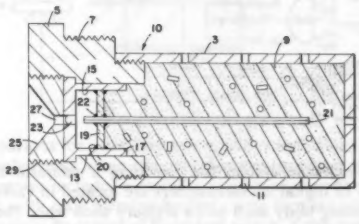
having a smaller outer diameter than that of the upper cup portion and a cup-wad having identical and symmetric top and bottom concaved portions the top concave portion receiving the curved lower edge of the skirt portion.

3,750,581

MISSILE MOTOR IGNITER ASSEMBLY

Robert E. Betts, and Nathan P. Williams, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 20, 1971, Ser. No. 181,784
Int. Cl. F42b *15/00*; F02k *9/04*
U.S. Cl. 102—49.7 2 Claims



An assembly for igniting a missile motor from a percussion primer carried in a cartridge case to an igniter charge located in the missle motor. A detonating cord, having one of its ends positioned in the cartridge case, is used to transfer ignition from the primer to the igniter charge. The end of the detonating cord adjacent the cartridge case is retained in position by a holder mounted in the cartridge case.

3,750,582

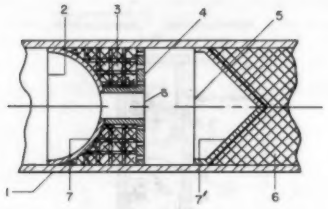
PROJECTILE WITH DIFFERENTIAL TANDEM SHAPED CHARGES

Irving L. Kintish, and Irwin Marcus, both of Rockaway, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 3, 1971, Ser. No. 177,736
Int. Cl. F42b *13/10*
U.S. Cl. 102—56 4 Claims

A projectile utilizing tandem shaped charges is produced,

said projectile having superior armor penetration power than previous shape charge projectiles.



The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to us of any royalties thereon.

3,750,583

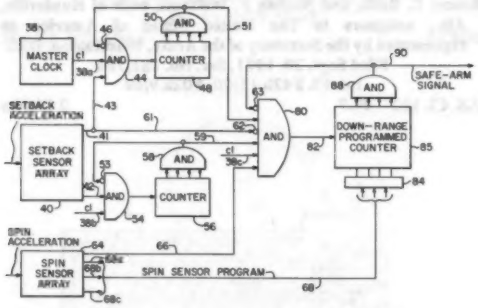
ELECTRONIC FUZE SYSTEM

Marvin H. White, Laurel; David D. O'Sullivan, Bethesda, both of Md., and Richard G. Hamel, Margate, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 4, 1971, Ser. No. 121,040

Int. Cl. F42c *15/40, 19/12, 11/00*

U.S. Cl. 102—70.2 R **5 Claims**



An electronic system for providing a safe/arm signal. A number of digital accelerometers are located in various parts of a moving body such as an artillery shell when the shell is fired, accelerometers measure acceleration in the setback acceleration - the acceleration in the direction of travel. Other accelerometers measure spin acceleration. When predetermined levels of both set-back and spin accelerations have been present for predetermined times, a safe/arm signal is provided by logic circuitry.

3,750,584

READILY MANUFACTURABLE THERMAL CELL UNIT FOR EXPLOSIVE PROJECTILES

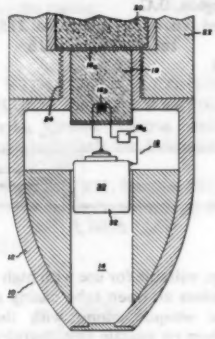
Peter R. Voyentzie, Gainesville, Fla.; Richard T. Ziemba, Burlington, Vt., and Raymond K. Sugalski, Gainesville, Fla., assignors to General Electric Company, Burlington, Vt.

Filed Mar. 5, 1968, Ser. No. 710,578

Int. Cl. F42c *15/36, 19/06, 15/40*

U.S. Cl. 102—70.2 R **1 Claim**

A projectile containing an explosive is provided with a fuse mechanism powered by an acceleration activated thermal cell unit which is constructed to be safely and conveniently manufactured. A terminal assembly is manufactured by positively attaching a terminal pin to a heat cup and then placing an igniting means and thermitic material therein. A separately fabricated assembly includes spaced inner and outer shells which are separated by a thermally fusible electrolyte. During fabrication the electrolyte is fused to decrease internal resistances within the cell. First and second electrode materials lie between the shells in contact with the outer and inner shells respectively.



3,750,585

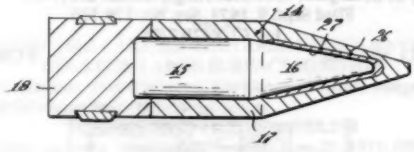
TRACER PROJECTILES

Fritz K. Feldman, Santa Barbara, Calif., assignor to Pacific Technica Corporation, Santa Barbara, Calif.

Filed Sept. 23, 1969, Ser. No. 860,230

Int. Cl. F42b *11/16*

U.S. Cl. 102—87 **13 Claims**



A tracer projectile having an ablative material attached to at least a portion of the exterior surface of the projectile body, such material preferably having a relatively low flash temperature whereby it is ignited by aerodynamic heating effects to produce an illumination during the projectile's flight to a target. The ablative material preferably may be attached by means of a bonding agent having a low coefficient of thermal conductivity to provide a heat barrier between the ablative material and the projectile body.

3,750,586

FIRING DEVICE

Robert E. Swallow; Darrell A. Bymoen, and Gaylon L. West, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

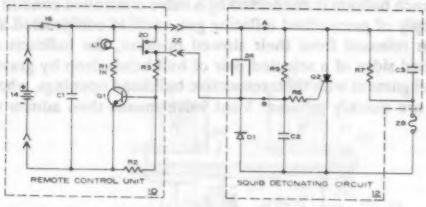
Filed June 25, 1071, Ser. No. 156,679

Int. Cl. F42b *23/26, 21/38*

U.S. Cl. 102—16 **3 Claims**

A firing device having an anti-disturbance firing mechanism; a lead short, shunt, or open circuit firing

mechanism; and an operator actuated switch firing mechanism, wherein each of said firing mechanisms is capable of causing detonation of a squib. The power supply and the



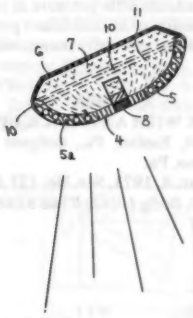
operator actuated arm/disarm and firing switch and ready lamp are included in a control unit remote from the squib housing.

3,750,587

PROJECTILE HAVING CHANGEABLE OUTER FORM

Erik B. Walde, Eskilstuna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Oct. 6, 1971, Ser. No. 186,943
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 **8 Claims**



An explosive projectile member comprising a flexible explosive enclosed in a flexible envelope or casing that enables the whole projectile to change its size and shape from the condition that it was in before launching to another condition after launch. The projectile member is of such construction that it can be compressed to such an extent as to enable it to be placed in a narrow pocket in a mother projectile and/or can be expelled from a short firing tube. After the projectile member has been expelled it is spread out or developed by means of the air drag and elastic forces assisted by additional resilient means provided in the elastic casing.

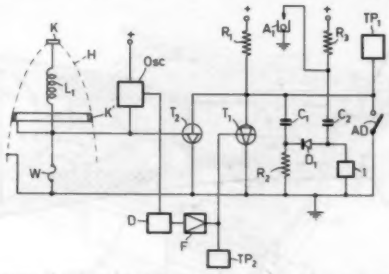
3,750,588

ARRANGEMENT IN AN ELECTRICAL FUSE FOR PROJECTILES

John Lennart Nordgren, Vallingby, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 14, 1971, Ser. No. 162,506
Claims priority, application Sweden, July 17, 1970, 9947/70
Int. Cl. F42c *13/00*
U.S. Cl. 102—70.2 P **11 Claims**

An ordnance fuze for projectiles that includes means for providing both a proximity fuse function and an impact fuse function. A fusible wire is included in the device so that both of said functions are available when the fusible wire is intact. External electrical contacts are provided whereby an external voltage can be applied to the fusible wire to melt same and thereby deactivate the proximity fuse function while maintaining the impact fuse function. The fuze can be used either as a proximity fuze or an impact fuze and provides a very simple means for switching between the two functions.

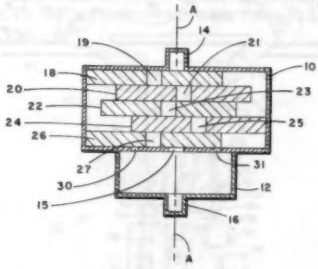


3,750,589

CENTRIFUGALLY DRIVEN SPIN DEVICE

Werner H. Egli, and Asbjorn M. Severson, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 13, 1971, Ser. No. 207,354
Int. Cl. F42c *15/26*
U.S. Cl. 102—79 **3 Claims**



An apparatus for providing a continuous path along an axis in a chamber only when the chamber rotates about the axis. The apparatus includes a plurality of discs or members in the chamber, with each member having a path forming portion in approximately its center of floatation which, if the member is uniform, is the center of the disc. The members are stacked upon each other with the plane of each member being substantially perpendicular to the axis. The chamber has a cross sectional area measured perpendicular to the axis which is of a size to permit the members to align themselves to provide the continuous aperture about the axis when all of the members are in a predetermined position. There is additionally provided a fluid in the camber so that as the chamber is rotated about the axis, when there is fluid in the chamber, the member move to their predetermined positions, centering the center of floatation to yield the continuous path.

3,750,590

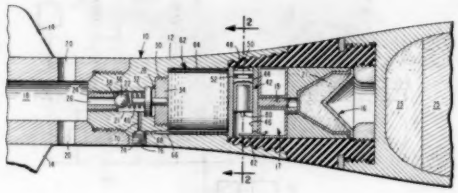
FLUID SAFETY AND ARMING SYSTEM

Evan D. Fisher, Chevy Chase, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 18, 1967, Ser. No. 677,844
Int. Cl. F42c *9/10, 15/30, 15/28*
U.S. Cl. 102—81 **10 Claims**

A combined fluid safety and arming system for a gas propelled projectile including a normally opened arming cir-

cuit having a button-type detonator spaced from a fixed contact, a fluid motor for moving the button-type detonator, a high pressure chamber, a propellant gas inlet to the chamber, a fluid restrictor coupling the high pressure chamber with a



fluid motor and a check valve positioned within the propellant gas inlet. A setback detent is operatively coupled to the fluid motor for restraining movement of the detent-type detonator in the absence of minimum launch acceleration.

3,750,591

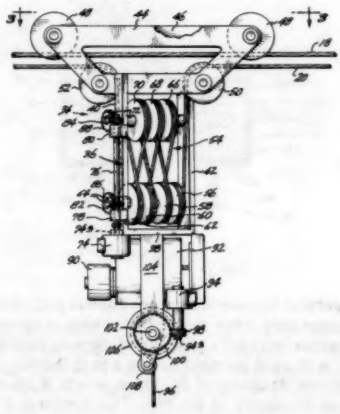
DRIVE MEANS FOR CABLE-MOUNTED VEHICLE

Marshall C. Makinster, Box 177, Grand Ronde, Oreg., and Wayne P. Grippin, Box 418, Willamina, Oreg.

Filed Sept. 30, 1971, Ser. No. 185,264

Int. Cl. B61b *7/02*

U.S. Cl. 104—112 **6 Claims**



Drive means for a cable-supported carriage in a cable-logging system. The drive means include an elongated stationary line that extends along and adjacent the cable which supports the carriage, a plurality of sheaves mounted on the carriage which frictionally engage the line, and a reversible hydraulic motor also mounted on the carriage for driving the sheaves.

3,750,592

LOCK MECHANISM EMPLOYING BALLOON VALVES FOR VACUUMIZED TUBE TRANSPORTATION SYSTEM

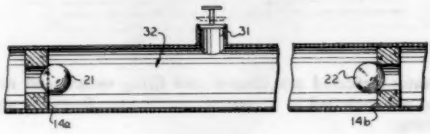
Byron C. Anderson, El Cajon, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 21, 1971, Ser. No. 145,742

Int. Cl. B61b *13/10*; **B65g** *51/04*

U.S. Cl. 104—138 **10 Claims**

For providing an air lock in a selected portion of a vacuumized tube in which high speed vehicles or trains are operated, a plurality of bulkheads are provided at selected spaced intervals throughout the length of the tube. Each bulkhead has two openings therein to allow vehicles or trains traveling in opposite directions to pass therethrough. A pair of inflatable balloons, which act as valves, are stowed in deflated condition, one adjacent each end of each bulkhead opening, and each balloon is connected by a valve controlled conduit to a supply of pressurized inflating gas, such as compressed air. When released from their stowed position, the balloons on selected sides of a selected pair of bulkheads drop by gravity into alignment with their respective bulkhead openings, where they are quickly inflated. Vent valve means then admits at-



mospheric air into the lock section of tube thus established between the selected bulkheads, and this air tends to flow through the openings in the selected pair of bulkheads into the vacuumized zones of the tube therebeyond. The air currents thus created urge the inflated balloons into seated condition on valve seats provided on the peripheries of their respective bulkhead openings to thereby seal such openings. Atmospheric air continues to be admitted into the lock section between the sealed off bulkheads until the pressure in such lock section is at atmospheric pressure, or at such lesser pressure as may be desired, at which time the vent valve means may be closed.

3,750,593

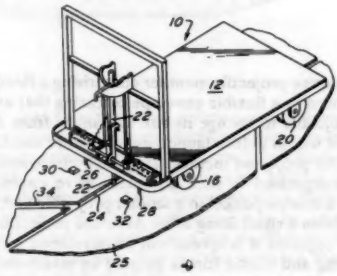
TOW VEHICLE WITH ANTI-BACK UP WHEELS

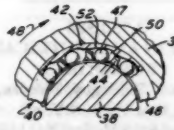
Stanley L. Zetterlund, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Mar. 8, 1971, Ser. No. 121,637

Int. Cl. B65g *17/42*; **F16d** *63/00*

U.S. Cl. 104—172 BT **3 Claims**



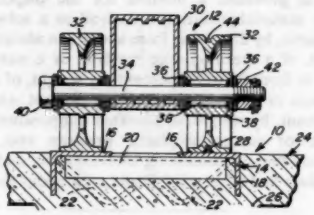


A tow vehicle adapted to be guided for movement along a slot is provided with swivel castor wheels at the front end of the vehicle. The front castor wheels are provided with roller clutch bearings which act as a brake to prevent the vehicle from being moved in a rearward direction.

3,750,594
DOLLY SYSTEM

Warren F. Drescher, Vienna, Ohio, assignor to Albee Homes, Inc., Niles, Ohio

Filed Feb. 1, 1971, Ser. No. 111,579
Int. Cl. E01b 5/00
U.S. Cl. 104—243 10 Claims

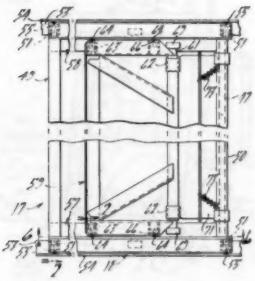


A dolly system utilized in moving modular units in an assembly plant. The system incorporates a series of parallel floor embedded two-rail tracks, one rail of each track having a guide bar provided longitudinally along the upper surface thereof. A dolly rides on each track, the dolly including an elongated support beam mounted on front and rear wheels, one set of front and rear wheels including annular grooves which receive and guide along the guide bar.

3,750,595
SHIPPING SYSTEM

Harvey W. Chapman, Detroit, Mich., assignor to Evans Products Company, Plymouth, Mich.

Filed Oct. 7, 1970, Ser. No. 78,835
Int. Cl. B60p 7/14; B61d 45/00
U.S. Cl. 105—376 7 Claims



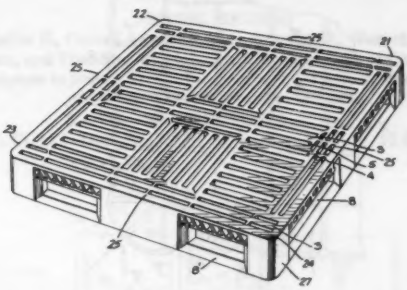
A freight bracing system particularly adapted for the transportation of freight in railway cars. The system includes a pair of pneumatically urged bulkheads, each supported adjacent one end wall of the railway car. In addition, a movable bulkhead assembly comprised of two panels adapted to be urged apart pneumatically is supported for movement along the length of the car. In this way, load units positioned between the respective pneumatic devices are braced and are pneumatically cushioned at each end.

3,750,596
INTERLOCKING STORAGE PALLET

Theodor M. Box, 1108 Aileen Rd., Brielle, N.J.

Continuation-in-part of Ser. No. 191,932, Oct. 22, 1971. This application Apr. 24, 1972, Ser. No. 246,668
Int. Cl. B65d 19/38
U.S. Cl. 108—43 14 Claims

An interlocking storage pallet is disclosed comprised of two generally planar parallel load bearing surfaces, having passages for fork lift and pallet trucks between the two surfaces. The two surfaces are separated from but joined to each other by reinforcing columnar portions located at spaced positions therein. To permit vertical stacking of the empty pallets,

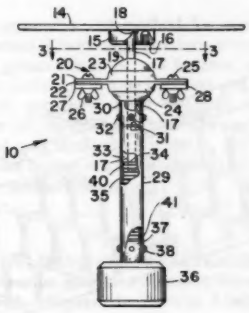


protuberances are molded on the lower surfaces of the columnar portions and recesses are molded in the upper surfaces. When vertically stacked, the interlocking of the protuberances in the recesses prevents lateral relative displacement of adjacent pallets.

3,750,597
GRAVITY ACTION TIPLESS TRAY WITH VERTICAL CUSHION MEANS

Joseph C. Muns, 1509 State St., Indianapolis, Ind.

Filed Oct. 18, 1971, Ser. No. 190,131
Int. Cl. A47b 23/00, 37/00; B60r 7/06; F16m 11/14
U.S. Cl. 108—45 7 Claims



A tipless tray which is inertially stabilized and which is isolated from vertical shocks. The tray is mounted atop a rod. A pendulum type weight is secured to a tube which is connected to a ball bearingly mounted to a pair of sheets secured together. The ball fits into a pair of spherical sockets positioned in opposing fashion in the pair of sheets. The rod extends freely through the ball and into the tube. A spring is positioned within the tube abutting a plate fixedly fastened to the bottom end of the rod. The spring cushionly supports the rod and tray above the ball.

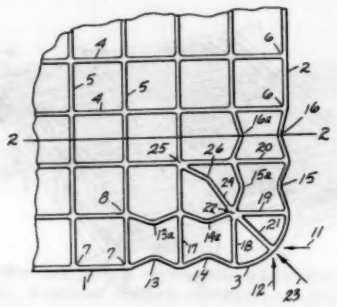
3,750,598
IMPACT ABSORBING CORNER STRUCTURE

Robert H. Campbell, Chicago, Ill., and Harold S. Cloyd, Erie, Pa., assignors to Continental Can Company, Inc., New York, N.Y. and Nosco Plastics, Incorporated, Erie, Pa.

Filed Mar. 24, 1971, Ser. No. 127,606
Int. Cl. B65d 19/00
U.S. Cl. 108—51 10 Claims

A self-reforming impact absorbing corner structure for pallets having a corner of lattice section with portions of outer

walls designed to buckle inwardly under impact and thereby prevent bulging outside the normal pallet dimensions, the pallet being formed of a thermoplastic material having sufficient memory to be substantially self-reforming.

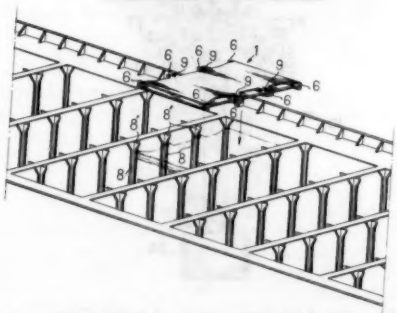


3,750,599

CONTAINER FOR MARINE TRANSPORTATION OF A LARGE-SIZED, MASSIVE CARGO

Eisei Tayama, 3155-93, Mutsuuracho, Kanazawa-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Jan. 10, 1972, Ser. No. 216,485
Claims priority, application Japan, May 14, 1971, 46/38776
Int. Cl. A47b *13/00*
U.S. Cl. 108—161 **3 Claims**



A container for marine transportation of a large-sized, massive cargo is provided for use with a container-destined vessel which has its hold divided by cell guides into unit areas for placement of standard-sized containers therein. The container comprises a plate-like container body having an area corresponding to the total area of more than one standard-sized containers. The body has corner fixtures at its four corners and at positions on both longitudinal sides which correspond to cell guide positions, each fixture having an aperture for engagement with a spreader. The fixtures located on both sides are formed notched recesses to avoid interference with projections on corresponding cell guides. The body includes a floor plate which is formed along the periphery and in the central portion thereof with a number of detent holes for mounting stoppers and attachment holes for fastening ropes. Stoppers mounted in selected detent holes fittingly engage the outer extremities of a wooden frame on the floor plate on which is a cargo is placed. Fastening ropes connected to the cargo are clamped in the attachment holes.

3,750,600

DISPOSAL OF THERMOPLASTIC MATERIALS

Ernest Osborne Ohsol, Stamford, Conn., and Arthur Perlmutter, Flushing, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 26, 1972, Ser. No. 247,633
Int. Cl. F23g *7/00*
U.S. Cl. 110—1 R **8 Claims**

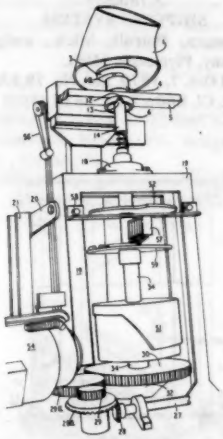
There is provided a method for the disposal of thermoplastic materials utilizing a fuel oil as a solvent for said thermoplastic, by dissolving from about 1 to about 20 percent, by weight, of a thermoplastic material or a mixture of said materials in from 99 to 80 percent, by weight, of a fuel oil, in the presence or absence of a cracking catalyst, usually from 1 to 10 percent, by weight, at elevated temperatures under atmospheric or superatmospheric pressure and, thereafter, burning said fuel oil containing thermoplastic material absent tarry residues and other solid, liquid, or gaseous pollutants.

3,750,601

APPARATUS FOR EDGE FINISHING BODY OPENING IN GARMENTS

Harold Barry Lee, Heidelberg, Victoria, Australia, assignor to Bond's Wear Pty. Limited, Camperdown, New South Wales, Australia

Filed Mar. 28, 1972, Ser. No. 238,802
Claims priority, application Austria, Mar. 30, 1971, PA 4452
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **6 Claims**



An edge finishing machine for an opening in a garment the machine comprising a first frame movable relative to a second fixed frame, a sewing machine on arms pivotally connected to the first frame, cam means to move the first frame and the arms so that the sewing machine needle will follow the edge of the garment opening to be finished and a rotatable garment support located adjacent the machine.

3,750,602

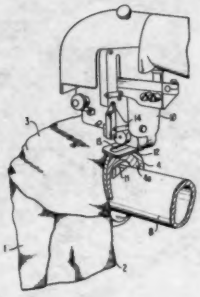
PROCESS FOR JOINING THE SLEEVE LINING IN SACK COATS AND LIKE GARMENTS TO THE SHOULDER PADS IN THE ARM SOCKET AND CONSTRUCTION FORMED THEREBY

Robert Ottich, Munchen, Germany, assignor to J. Strobel & Sohne, Munchen, Germany

Filed Mar. 20, 1972, Ser. No. 235,904
Int. Cl. D05b *1/24*; A41d *27/26*
U.S. Cl. 112—267 **18 Claims**

A process for joining the sleeve lining in sack coats and similar garments to the shoulder pads in the arm socket by

means of a backstitch-blindstitch operation. The blindstitches are arranged so as to extend only partially through the shoulder pads so as to avoid stiffening the shoulder pads. The blindstitch operation is done on a backstitch-blindstitch type sewing machine. Prior to placing the lining and shoulder pads



on the machine, the pertinent sleeve and coat structure is pulled through an opening in the sleeve lining. The invention also contemplates the construction of the sleeve lining, armhole part and shoulder pads with the blindstitches extending only partially through the shoulder pads.

3,750,603

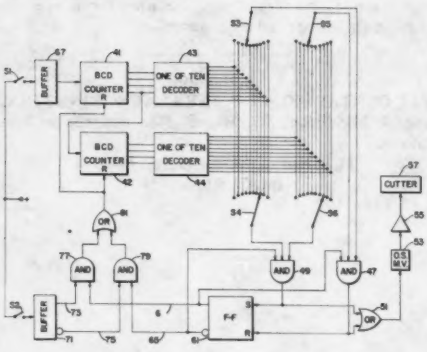
APPARATUS FOR CONTROLLING A SEWING MACHINE THREAD CUTTER

Robert A. Martin, Whitman, Mass., assignor to Clevepak Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 26,499, April 8, 1970, abandoned. This application Apr. 5, 1971, Ser. No. 131,294

Int. Cl. D05b *65/02*

U.S. Cl. 112—252 **8 Claims**



An apparatus and method for controlling sewing machine operations and a counting combination whereby a sequence of pulses having a frequency which is a function of machine speed is produced and counted by a counter. Upon a first count, the counter produces a first operation, such as cutting, reversing the machine, changing machine speed, etc., to take place and upon a second count the counter produces a second signal which causes a second operation to take place. In one embodiment the counter operates a counter after a predetermined amount of material or thread has been advanced before the cutter and again after a predetermined number of stitches have been taken after the material has passed the needle. The counting combination includes first and second switches connected to the output of digital counting circuitry for manually selecting the first and second counts and logic circuitry linking the switches to a flip-flop for providing signals at the two counts.

3,750,604

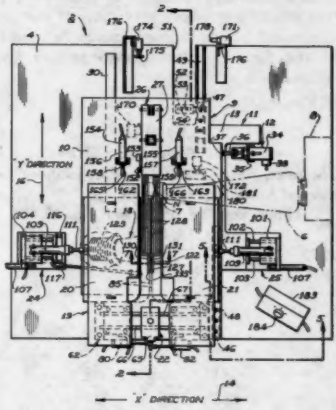
SEWING METHOD

Charles O. Carrel, Vandalia, Mo.; Edward W. Wensell, Parma, and Thaddeus W. Majusick, Cleveland, both of Ohio, assignors to Bobbie Brooks Incorporated, Cleveland, Ohio

Filed Jan. 11, 1971, Ser. No. 105,376

Int. Cl. D05b *3/12*

U.S. Cl. 112—265 **12 Claims**



A sewing apparatus and method for securing a fastener between opposed fabric edge portions which automatically transfers and guides the fabric and fastener, as a unit, relative to a relatively stationary sewing machine and needle to form a predetermined generally linear stitching line pattern for securement to the fastener, and in which each edge portion is held in folded and tensioned condition, and in spaced-upon relation to itself during selective portions of the operation to effect precise, uniform stitching.

3,750,605

SLIDING CLASP FASTENERS

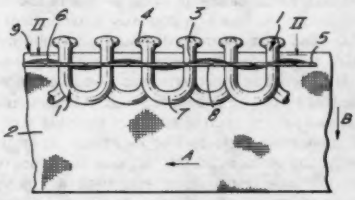
Geoffrey Warburton, and Ernest Robert Whetter, both of Cardiff, England, assignors to Textron Limited, Edenbridge, Kent, England

Filed Aug. 4, 1971, Ser. No. 168,881

Claims priority, application Great Britain, Aug. 14, 1970, 39,351/70

Int. Cl. D05b *3/12*

U.S. Cl. 112—265 **5 Claims**



A sliding clasp fastener is disclosed. The fastener comprises fastener strings of interlockable and U-shaped limbed fastener

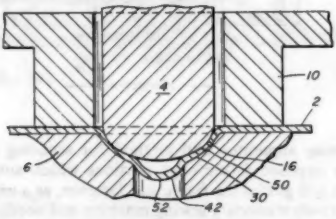
elements attached to respective fastener tapes by a line of stitching. The loops of the stitching pass over respective fastener elements to attach the fastener string to its fastener tape. Each string is anchored to its fastener tape by a filamentous element, such as a fine gauge cord or twisted textile thread, which meanders through spaces defined between the U-shaped limbs of the respective fastener elements in the longitudinal direction of the string. Also disclosed is a method of attaching a fastener string of U-shaped limbed fastener elements to a longitudinal fastener tape. The fastener tape and the string of fastener elements are fed past a stitching station at which a needle The an attaching machine is located. Te needle is used to insert a row of stitches to attach the fastener elements to the tape, and a filamentous element is fed in the longitudinal direction of the tape alternately in front of and behind the stitching needle transversely of the tape. The filamentous element passes through spaces defined between the limbs of the fastener elements to anchor the attaching stitching and hence to the tape.

3,750,606

RIVET FABRICATION

Fred R. Schultz, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 18, 1970, Ser. No. 20,703
Int. Cl. B21d *41/26*
U.S. Cl. 113—1 F **9 Claims**



A method of forming an integral rivet in a sheet element including providing cooperating male and female dies and an interposed sheet element, moving the male die toward the female die to draw an outwardly directed hollow boss. Continuing movement of the male die toward the female die to thin an annular region in the lower portion of the hollow boss by compression which establishes metal flow substantially entirely in the direction of the upper portion of the hollow boss. Continuing relative closing movement of the male die with respect to the female die to establish an annular band of thinned material extending upwardly toward the upper portion of the hollow boss, whereby the upper portion of the hollow boss has a thickness substantially equal to the thickness of the remainder of the sheet element. The sheet element may be peripherally restrained around the area in which the boss is formed during boss formation.

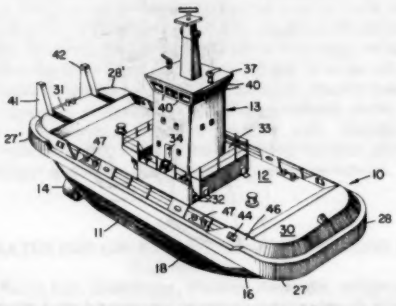
Apparatus for fabricating an integral rivet in sheet material including a male die having a convexly curved sheet contacting surface and a rearwardly disposed generally cylindrical surface. A female die having a bore defining wall and a peripheral material supporting surface disposed substantially perpendicular to the bore defining wall. An annular concave transition surface connecting the bore defining wall and the material supporting surface. The radius of curvature of the sheet contacting surface and the radius of curvature of the annular concave transition surface being such that movement of the male die toward the female die establishes relative closing movement between the dies which occurs initially at the outer portion of the annular concave surface of the female die and progresses inwardly along the surface as male die movement continues.

3,750,607

SHALLOW-DRAFT BOAT

David J. Seymour, 588 36th Ave., San Francisco, Calif., and David Martin, 127 E. 59th St., New York, N.Y.

Filed June 23, 1971, Ser. No. 155,764
Int. Cl. B63b *3/00*
U.S. Cl. 114—65 R **20 Claims**



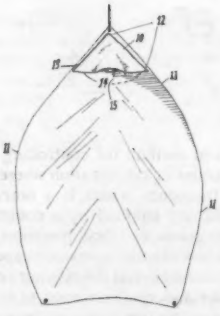
A shallow-draft boat that is operated by omni-directional thruster means lying below the flat hull, which is stabilized and protected by one or more skegs. The boat has a high beam-to-length ratio, a low depth-to-length ratio, and a low depth-to-beam ratio. Its hull is double-ended and symmetric along both the longitudinal axis and the transverse axis, and the hull has a fully developable surface enabling construction from flat plates without compound curving. One embodiment, especially useful as a harbor tugboat, has a high, centrally located deckhouse with an entry well above deck level; this deckhouse is water-tight at the deck, and it may be hinged to swing about 90° for open access to the hold; the engines lie below this deckhouse and project up into its lower part. Buoyancy compartments are preferably provided at each end, and in some forms of the invention at least one end has adjustable and retractable pusher knees. Other modified forms are simpler and have different special adaptations.

3,750,608

SELF CONTAINED SPINNAKER LAUNCHING POUCH

Lennie S. Middleton, Jr., Miami, Fla., assignor to Max D. Puyanic

Filed Nov. 2, 1971, Ser. No. 194,991
Int. Cl. B63b *9/04*
U.S. Cl. 114—103 **1 Claim**



A pocket sewn into a spinnaker sail with the purpose in mind of creating a self contained receptacle from which the spinnaker may be launched. The pocket once sewn on is used for a place to store the spinnaker as an added benefit. The pri-

mary purpose of the pocket is to have a device from which to launch the sail which does not require devices separate from the sail itself and which eleminates the problems associated with launching this particularly cumbersome sail. The spinnaker is raised while contained in the pocket and while being raised is pulled from the pocket by the use of the lines attached to the feet of the sail.

3,750,609

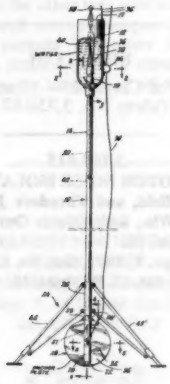
POWERFUL THRUSTER METHOD AND APPARATUS SUITABLE FOR DRIVING A MEMBER SUCH AS AN ANCHOR OR PILE INTO THE EARTH, AND ANCHORING AND PILE APPARATUS

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Division of Ser. No. 799,449, Feb. 14, 1969, Pat. No. 3,604,519. This application Aug. 28, 1970, Ser. No. 67,953

Int. Cl. B63b *21/28*

U.S. Cl. 114—206 A **8 Claims**



A novel thruster method and apparatus generating a sequence of powerful thrusts suitable for driving an anchor, a pile, or the like into the earth. A novel anchor, anchor placing apparatus and pile driver are described. An acoustic impulse repeater device is located within a reaction barrel to rapidly upwardly impel water therefrom. In the case of the anchor placing apparatus the reaction of the barrel rams an anchor and the anchor chain attached to it into sediment below a body of water. In the pile driver embodiment, the pile has taken the shape of the reaction barrel into which water is placed. Various embodiments are described.

3,750,610

MOTOR-DRIVEN ANCHOR DAVIT

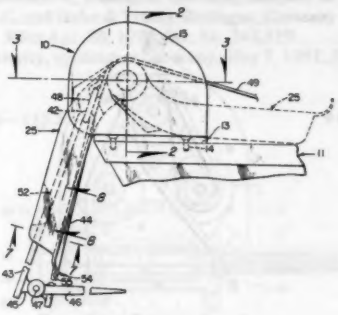
Charles F. Davis, 711 Bain Station Rd., Kenosha, Wis.

Filed Sept. 17, 1970, Ser. No. 73,059

Int. Cl. B63b *21/22*

U.S. Cl. 114—210 **10 Claims**

A motor-driven anchor davit mounted on a boat deck includes an anchor socket mounted on a drive shaft to pivot through a vertical plane between inboard and outboard positions. The anchor is guided into alignment with the socket at its entrance opening and slidably received thereinto by retracting a cable or line attached to the anchor. The socket is keyed to the shaft but has a limited degree of free swing on the shaft in the outboard position and inboard position and resilient means cushions between the shaft key and socket mount. When the anchor is positioned in the socket a motor drive including a gear train which is coupled between a motor shaft and the drive shaft is operative to pivot the socket vertically between said positions. A control circuit includes a power control switch to initiate motor drive movement in either direction from a point remote from the socket and trip members connected in the circuit are moved in response to



the movement of the anchor socket to automatically stop the motor drive when the anchor socket approaches either of said positions.

3,750,611

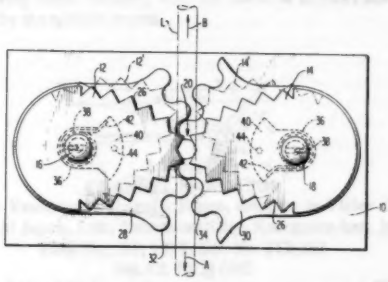
TWO-WAY CAM CLEAT

Gregory A. Field, Annapolis, Md., assignor to S and R Associates, Inc., Annapolis, Md.

Filed Sept. 24, 1971, Ser. No. 183,312

Int. Cl. B63b *21/08*

U.S. Cl. 114—218 **3 Claims**



A pair of threadably engaged pivotable cam cleats having oppositely directed camming surfaces are pivotably mounted on a base, spring biased to closed nip position, but permitted to rotate in either direction against the bias of a spring to facilitate the entry of a line between the cam element in either of two opposing directions while preventing retrograde movement by the presence of the line within the nip.

3,750,612

BOAT DOCKING DEVICE

Joseph D'Agostino, Jr., 30 E. Main St., Hummelstown, Pa.

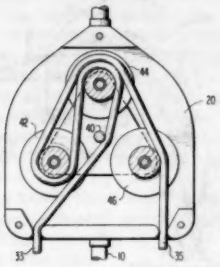
Filed June 19, 1972, Ser. No. 263,885

Int. Cl. B63b *21/04*

U.S. Cl. 114—221 **6 Claims**

An elongated handle having gripping means at one end and hook means at the opposite end is provided with a locking pulley device adjacent the hook end which may be selectively operated to a first position allowing free passage of a brake therethrough and a second position wherein the rope will be frictionally wrapped upon itself to prevent passage of the rope therethrough. One end of the rope is adapted to be secured to a cleat on a boat and the hook is adapted to be secured to a

dock whereby upon pulling the opposite end of the rope with the locking pulley device in the first position, the slack may be



taken up to draw the boat to the dock and upon operating the pulley device to the second position, the boat will be securely held relative to the dock.

3,750,613

DEVICE FOR USE WITH LAND VEHICLES TO MAKE THE SAME AMPHIBIOUS

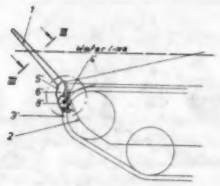
Uwe Krumsiek, Kassel, and Wilfried Holscher, Vellmar, both of Germany, assignors to Rheinstahl AG, Essen, Germany

Filed Dec. 3, 1971, Ser. No. 204,531

Claims priority, application Germany, Dec. 17, 1970, G 70 46 610.3

Int. Cl. B60f *3/00*

U.S. Cl. 115—.5 R **4 Claims**



A device for making land vehicles amphibious, which includes a shield with holding means adapted to be mounted on the front side of the vehicle, said shield being so designed and mounted that in assembled condition it partly protrudes beyond and sticks out of the water through which the vehicle is to pass, while the shield with holding means is of a lightweight construction and peferably has an angle of incidence of 45° with regard to the longitudinal axis of the vehicle.

3,750,614

JET PROPULSION UNIT FOR BOATS

Dante Giacosa, Turin, Italy, assignor to Sira Societa Industriale Ricerche Automotoristiche, Turin, Italy

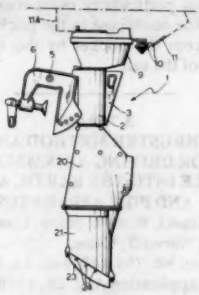
Filed Apr. 27, 1972, Ser. No. 248,145

Claims priority, application Italy, May 11, 1971, 68558 A/71

Int. Cl. B63h *21/00*

U.S. Cl. 115—17 **3 Claims**

This invention provides a water jet propulsion unit for boats which has a ducted impeller driven by an internal combustion engine mounted on top of the unit, the impeller having a vertical axis and directing a water jet rearwardly through an elbow duct. Cooling water is bled from the elbow duct upwardly to flow over surfaces at the upper end of the unit which are heated by the engine, this water mixing in an upper chamber with engine exhaust gases before travelling downwardly through a second duct to a chamber surrounding the elbow



duct, from which the cooling water and exhaust gases escape through apertures facing in the same direction as the jet nozzle.

ERRATUM

For Class 115—18 see:
Patent No. 3,750,621

3,750,615

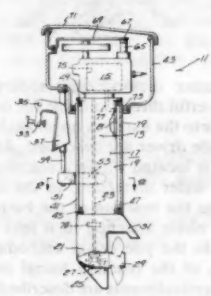
OUTBOARD MOTOR NOISE ISOLATION SYSTEM

Gerald Haft, Brookfield, and Theodore J. Holtermann, Milwaukee, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 7, 1971, Ser. No. 131,937

Int. Cl. B63h *21/26*

U.S. Cl. 115—18 **17 Claims**



Disclosed herein is an outboard motor comprising a propulsion unit including a drive shaft housing rigidly connected to and supporting a power head, a gear case rigidly connected to the bottom of the housing, a shell extending in circular relation to the housing upwardly from the gear case, and resilient means including a wall extending between the housing and the shell adjacent to the bottom of the shell for locating the shell in spaced encircling relation to the housing and for enabling retention of water in the space above the wall and between the shell and the housing.

3,750,616

POWER TRANSMISSION SYSTEM

Donald F. Nelson, 7560 Kentwood Ct., Gilroy, Calif.

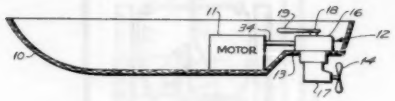
Filed Apr. 5, 1972, Ser. No. 241,361

Int. Cl. B63h *25/42*

U.S. Cl. 115—35 R **19 Claims**

A steerable power transmission system particularly useful for driving and steering a small boat is described. A central

steering shaft, a drive tube, a fixed inner housing, and a rotatable outer housing are coaxial. The propeller shaft extends from the outer housing transverse to the common axis. The steering shaft is connected to the outer housing for pivoting it and the propeller axis. The propeller shaft is connected to a bevel gear that engages a pair of contra-rotating bevel ring gears on opposite sides thereof so that the drive torque is balanced. Means are provided for driving each of the ring



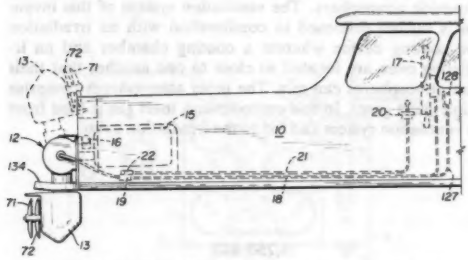
gears from the drive tube and each of these means includes an overrunning clutch that permits its respective ring gear to run relatively faster than the other ring gear so that the outer housing can be pivoted with nominal torque on the steering shaft. The arrangement permits the outer housing and hence propeller axis to be rotated 360° in either direction, thereby giving an inboard motor boat many of the advantages of an outboard motor.

3,750,617

LIFTING MECHANISM FOR INBOARD-OUTBOARD BOAT DRIVE

Lyle C. Pinkerton, 9264 Brighton Rd., Henderson, Colo.

Filed Sept. 9, 1971, Ser. No. 179,004
Int. Cl. B63h *5/12*
U.S. Cl. 115—41 R **12 Claims**



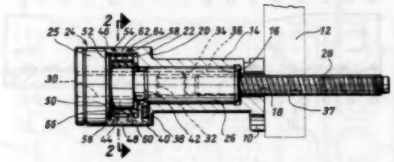
Lifting mechanism for raising the lower propulsion unit of the drive mechanism for a boat approximately 180° from its normal drive position and lowering said unit from its raised position to its normal drive position, comprising a stationary main housing for mounting on the stern of the boat, a rotatable housing in the main housing, a lower propulsion unit rotatable about a vertical axis in the rotatable housing, a worm loosely mounted on a power driven shaft in the main housing adjacent the rotatable housing, and a worm gear meshing with the worm splined into the rotatable housing. The loosely mounted worm is gripped by a dog on the power driven shaft for rotating with the shaft for the lifting operation and is released for free rotation on the shaft when the lower propulsion unit meets an obstruction. An indicator dial indicates the position of the lower propulsion unit relatively to the fixed housing.

3,750,618

POSITIONING ARRANGEMENT, ESPECIALLY ADJUSTING THE FEED STROKE OF A TOOL CARRIER IN A MACHINE TOOL

Wolfgang Griebenow, Esslingen, Germany, assignor to Index-Werke K.G. and Hahn & Tessky, Esslingen, Germany

Filed Apr. 28, 1972, Ser. No. 248,519
Claims priority, application Germany, May 7, 1971, P 21 22 691.5
Int. Cl. B23q
U.S. Cl. 116—115.5 **9 Claims**



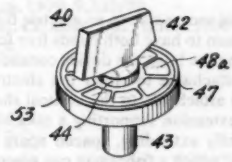
A positioning arrangement, especially for adjusting the feed stroke of a tool carrier in a machine tool, in which a scale ring provided with a scale for rough adjustment of the feed stroke cooperates with spindle means turnably mounted in a housing fixed to the tool carrier, provided with a scale for fine adjustment of the feed stroke, and in which a positioning ring provided with a positioning mark is arranged between the two scales. A step down gearing is provided within the rings for driving the scale ring by the spindle means. The step down gearing comprises an internal gear integral with said scale ring and having teeth meshing with the teeth of a gear which is turned by the spindle means.

3,750,619

CHANNEL INDICATOR

Takashi Yamamura, Ibaraki, Japan, assignor to Victor Company of Japan, Ltd., Yokohama-City, Kanogawa-ken, Japan

Filed Dec. 27, 1971, Ser. No. 212,161
Int. Cl. H03j *1/02*
U.S. Cl. 116—124.1 **4 Claims**



A channel indicator generally comprises a plurality of channel indicating members respectively indicating a channel number, an indicator body which is capable of mounting and accommodating the channel indicating members individually replaceably, and a knob portion which is rotatable integrally with the indicator body. The channel indicator indicates the channel numbers in cooperation with a tuner. The channel indicating members can be individually removed from the indicator body and replaced.

3,750,620

VAPOR DEPOSITION REACTOR

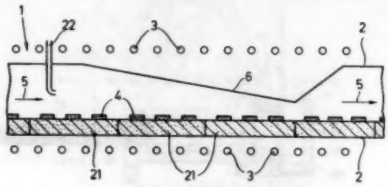
Franciscus Cornelis Eversteijn, and Hermanus Leonardus Peek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1971, Ser. No. 120,983

Claims priority, application Netherlands, Mar. 11, 1970, 7003431

Int. Cl. C23c *13/10*

U.S. Cl. 118—48 **6 Claims**



The invention relates to a reactor in which during operation a susceptor is heated and indirectly also a substrate, for example, of semiconductor material arranged on the susceptor. The heated substrate reacts with a gas stream so that the substrate may be etched or oxidized. As an alternative material may be deposited on the substrate from the gas stream.

It is a drawback that, viewed in the direction of the gas stream, the rate of performance of these processes decreases.

An appreciable improvement is obtained by using a reactor tube having a section which tapers in the direction of the gas stream.

3,750,621

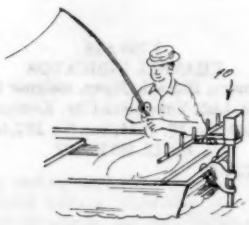
ELBOW STEERING FORK FOR FISHING MOTORS

Leo C. Hoyt, 321 E. Minnesota, Indianapolis, Ind.

Filed Nov. 1, 1971, Ser. No. 194,157

Int. Cl. B53h *21/26*

U.S. Cl. 115—18 R **2 Claims**



An attachment secureable to an electric fishing motor so to permit a fisherman to have both hands free for casting or fishing while steering the boat, the device consisting of an adjustable extension attachable to either the electric motor handle end or which is attachable to the vertical shaft of the motor, the adjustable extension supporting a rake like fork having a series of upwardly extending, spaced apart tines between a selective ones of which a fisherman can place his elbow while steering.

3,750,622

ANTI-POLLUTION VENTILATION SYSTEM FOR SPRAY-TYPE COATING CHAMBERS

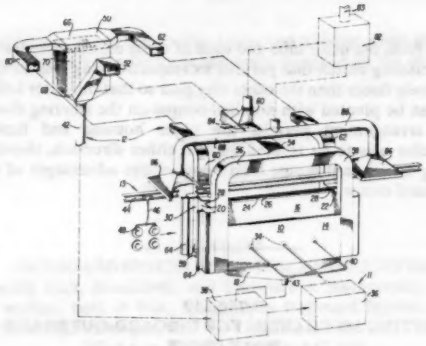
Allen B. Repp, 24842 Penn Ave., Dearborn, Mich., and William B. Berk, Jr., 22886 Evergreen Rd., Southfield, Mich.

Filed June 11, 1971, Ser. No. 152,218

Int. Cl. B05c *11/16*

U.S. Cl. 118—326 **13 Claims**

An anti-pollution ventilation system includes means for circulating a fluid in a closed-loop path outside of a spray-type coating chamber. The circulating fluid is directed so as to form a fluid curtain across entrance and exit openings of the coating chamber. The system also includes a separator for continuously separating coating material from the circulating fluid. The separator comprises a plurality of side-by-side bores, having helical baffles therein, through which circulating fluid is directed. In one embodiment of the invention, some of the bores can be selectively closed. Means are included for transporting separated coating material from the separator back to the coating chamber for reuse. One refinement of the invention is to provide a bleeding means for bleeding fluid



from the ventilation system, and another refinement is to provide a leakage collecting means for collecting leakage from the fluid curtains; in both cases a vapor-contaminant cleaner is provided to clean drained or leaked fluid before it is released to outside atmosphere. The ventilation system of this invention is further disclosed in combination with an irradiation type coating device wherein a coating chamber and an irradiating oven are located so close to one another that their inner atmospheres can mix. The inner atmospheres comprise mainly inert gases. In this embodiment, inert gas is bled from the ventilation system and fed to the irradiation oven.

3,750,623

GLOW DISCHARGE COATING APPARATUS

James F. Carpenter, St. Louis; Leon E. McCrary, Bridgeton; Kenneth E. Steube, St. Charles; Albert A. Klein, Jr., St. Louis, and George H. Kesler, Creve Coeur, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

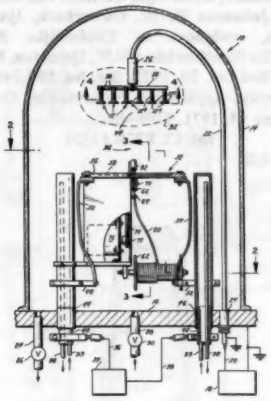
Continuation-in-part of Ser. No. 751,499, Aug. 9, 1968, abandoned. This application Feb. 11, 1972, Ser. No. 225,434

Int. Cl. C23c *13/12*

U.S. Cl. 118—49.5 **11 Claims**

An apparatus for plating workpieces including particularly irregularly shaped workpieces by exposing said workpieces to controlled environmental conditions including an atmosphere of inert gas, ionizing particles of the gas in the presence of a relatively high voltage electric field whereby the ionized particles of inert gas are attracted toward and bombard the workpieces thereby cleaning and preconditioning the workpieces, and simultaneously vaporizing particles of a plating substance into the controlled environment whereby some of said

vaporized particles are ionized, and both neutral and ionized particles are deposited on the surfaces of the workpieces including surfaces which may be hidden from line-of-sight of the source of vaporized particles.

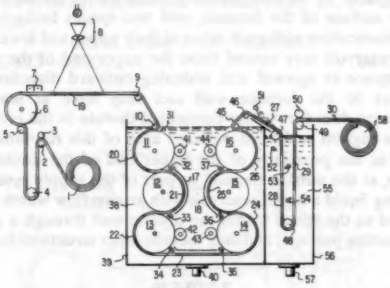


3,750,624

APPARATUS FOR DEVELOPING ELECTROPHOTOGRAPHIC CONTINUOUS WEB MATERIAL

Masamichi Sato; Osamu Fukushima, and Seiji Matsumoto, all of Asaka-shi, Japan, assignors to Fugi Photo Film Co., Ltd., Minami, Ashigaka-shi Kanagawa, Japan

Filed July 21, 1971, Ser. No. 164,741
Claims priority, application Japan, July 21, 1970, 45/63763
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **2 Claims**



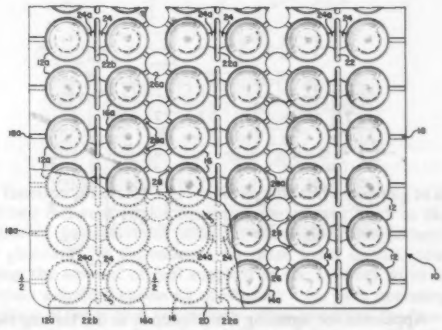
An apparatus for developing electrophotographic continuous web material which comprises developing electrode drums consisting of end portions with larger diameter to hold the edge portions of an electrophotographic continuous web material and an electroconductive middle portion with smaller diameter to face the surface holding electrostatic latent image of the electrophotographic material with a small distance thereto, support drums to be brought into intimate contact with the rear surface of the material, the developing electrode drums and the support drums being alternatively in a container for liquid developer so as that the material can be wound on the drums to form approximately semi-circular contact with each of the drums, fixed developing electrodes curved and provided along the periphery of the support drums, means for driving the electrophotographic material under tension, and means for supplying liquid developer between the electrophotographic material and the fixed developing electrodes or the smaller diameter portions of developing electrode drums along the advancing direction of the electrophotographic material.

3,750,625

INSECT REARING TRAY

Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 10, 1972, Ser. No. 279,407
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **10 Claims**



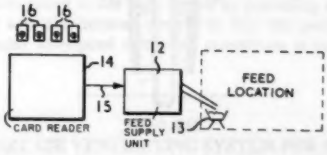
A tray for use in mass rearing of insects, particularly beetles such as boll weevils, in an artificial environment from incubation, through hatching and growth; and including a compartmented tray with multiple cup-like compartments arranged in multiple rows with shallow egg receiving recesses between the compartment of pairs of rows and communicating with upper edge portions of the compartments through shallow crawl passages; and with the rows of compartments in communication with shallow air access passages at the upper edge portions thereof peripherally removed from the crawl passages; and the entire compartmented tray being covered by an imperforate sheet of plastic material forming the upper closing walls of the several recesses, passages and compartments.

3,750,626

FEED CONTROL INSTALLATIONS FOR HERDS OF ANIMALS

Terence Princep Smith, Dudley, England, assignor to Teledictor Limited, Tipton, Staffordshire, England

Filed Nov. 5, 1970, Ser. No. 87,285
Claims priority, application Great Britain, Nov. 12, 1969, 55,274/69; Feb. 26, 1970, 9,337/70
Int. Cl. A01k *5/02*; G06f *13/00*
U.S. Cl. 119—51 R **2 Claims**



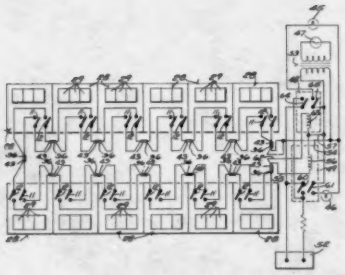
A feed control installation for a herd of animals, including a feed location, a series of feed indicator elements such as punched cards, each bearing an identity symbol associating it with a specific animal and each carrying feed information representative of a desired quantity of feed for that animal, a card reader or other feed indicator element reader connected

through a control means to a feed supply unit to cause the feed supply unit to supply the feed quantity indicated by the feed indicator element presented to the reader.

3,750,627
TURNING CONTROL SIGNAL

Allan A. MacKinnon, Gloucester, England, assignor to Associated Manufacturers International, S. A., Chicago, Ill.

Filed Nov. 5, 1971, Ser. No. 196,008
Int. Cl. A01k 41/06
U.S. Cl. 119—44 **7 Claims**

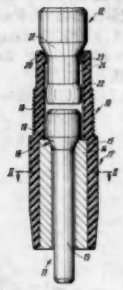


Apparatus for signaling a malfunction in the turning motion of egg trays in an incubator. The apparatus includes an egg tray position sensor, an electric circuit and a signal. The turning motion of the tray directly affects the position of the sensor and directly triggers the signal.

3,750,628
WATERING VALVE FOR SMALL ANIMALS, ESPECIALLY CHICKENS, PREFERABLY WITH DRIP PAN

Egon Schumacher, Rechternesstr. 18, 12847 Barnstorf, Germany

Filed Aug. 20, 1971, Ser. No. 173,611
Claims priority, application Germany, Aug. 20, 1970, G 70 31 233.3; Aug. 20, 1970, G 70 31 234.4
Int. Cl. A01k 7/00
U.S. Cl. 119—72.5 **6 Claims**

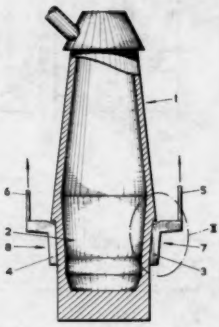


A watering valve and trough for chickens. The valve has a body housing two axially aligned conical valves, the upper one having a plastic seat and the lower one having a metal seat. The valve body is inserted into a water line from the underside and a cup like trough is attached to the protruding body. An actuating lever is pivoted in the trough and opens both valves when struck by a chicken's beak.

3,750,629
COOLED FURNACE AND A COOLING SYSTEM THEREFOR

Rudolph E. Cramer, Beverwijk; Cornelis Van Der Viliet, Akersloot, and Johannes H. W. Ouwerkerk, Ijmuiden, all of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V., Ijmuiden, Netherlands

Filed Oct. 20, 1971, Ser. No. 190,745
Claims priority, application Netherlands, Oct. 23, 1970, 7015595; June 14, 1971, 7108145
Int. Cl. F22b 37/00
U.S. Cl. 122—6 R **19 Claims**



A furnace over at least part of its outer surface is provided with a double wall, the space enclosed by said double wall being part of a circulation system for cooling liquid without pressure, there being a reservoir above the double wall space in which vaporized cooling liquid can be separated from the cooling mixture, which reservoir is in communication with the upper end and the lower end of the double wall space, the reservoir being in direct open communication with the upper end of the double wall space and being positioned immediately on top thereof and the double wall space being divided into two spaces by an intermediary baffle about parallel to the outer surface of the furnace, said two spaces being in open communication with each other at their upper and lower ends. The reservoir may extend from the upper end of the double wall space in upward and widening outward direction with respect to the furnace wall and may have at least one discharge duct for vapour connected thereto in the proximity of the highest and most outward area of this reservoir; may have in the proximity of the upper end of the double wall space, at the outside thereof, as part of the supply system for cooling liquid a liquid reservoir with an overflow which is connected to the space within the double wall through a narrow connecting passage; and may include other structural features.

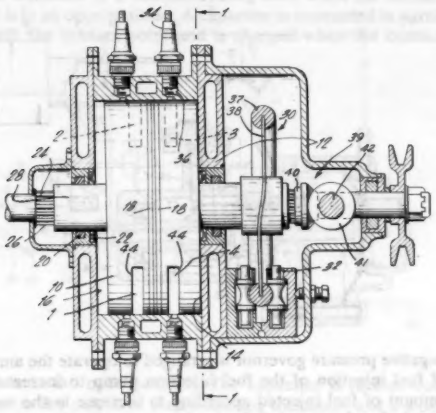
3,750,630
ROTARY COMBUSTION ENGINE

David S. Hariman, Djakarta, Indonesia, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 23, 1971, Ser. No. 117,961
Int. Cl. F02b 53/08
U.S. Cl. 123—8.19 **4 Claims**

A rotary combustion engine employing a unique system of combustion wherein in one revolution there occurs two intake mixture steps, two compression steps, four combustion steps, four powerstrokes and four exhaust steps. The engine comprises a housing, a cylindrical rotor disposed in the housing, a cylindrical shaft mounted in the housing for supporting the rotor therein, and a rotatable wheel coupled to the rotor having one half thereof displaced and non-planar with respect to the other half for laterally reciprocating the rotor in the housing during rotation of the rotor. Two pairs of combustion

chambers are disposed in the rotor, each disposed opposite the other pair. The combustion chambers have a curved shape



so that they open at one end at the periphery of the rotor and at the other end at the sides thereof.

3,750,631

FUEL INJECTION SYSTEM CONTROLLED BY THE AMOUNT OF AIR DRAWN IN DURING THE SUCTION STROKE

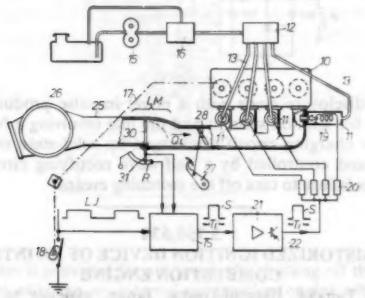
Hermann Scholl, Stuttgart; Harald Mauch, Korntal; Otto Glockler, Renningen; Norbert Rittmannsberger, Stuttgart, all of Germany; Wolfgang Reichardt, Sevres, France; Peter Werner, Stuttgart, and Ulrich Drews, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 9, 1971, Ser. No. 161,192

Claims priority, application Germany, July 11, 1970, P 20 34 497.2

Int. Cl. F02m *51/00*; F02d *5/02*

U.S. Cl. 123—32 EA **24 Claims**



The position of a static plate used to measure the amount of air sucked through the intake manifold controls the wiper of a potentiometer that is connected to control either the rate of charging or of discharging of a capacitor that is charged in synchronism with the rotation of the engine crank shaft. The length of time that the capacitor or inductor takes to discharge determines the length of time that the fuel injection valve is open.

3,750,632

ELECTRONIC CONTROL FOR THE AIR-FUEL MIXTURE AND FOR THE IGNITION OF AN INTERNAL COMBUSTION ENGINE

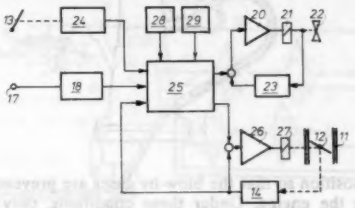
Richard Zechnall, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 25, 1971, Ser. No. 128,617

Claims priority, application Germany, Mar. 26, 1970, P 20 14 633.2; Feb. 5, 1971, P 21 05 353.2

Int. Cl. F02b *3/00*; F02p *5/04, 1/00*

U.S. Cl. 123—32 EA **18 Claims**



A function generator is fed input signals corresponding to at least two different engine operating parameters, such as the position of the accelerator pedal and the engine rpm, the function generator, in dependence on these input signals, controlling the amount of fuel supplied to the cylinder so as to maintain a desired excess air coefficient λ for each operating condition of the engine. In one form of the invention, the function generator controls the fuel and air supplied, as well as the ignition timing.

3,750,633

ELECTRONIC GOVERNOR FOR FUEL-INJECTION TYPE INTERNAL COMBUSTION ENGINES

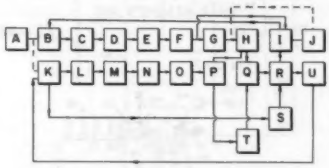
Yoshio Ohtani, Higashi-Matsuyama, and Todomu Kakijiama, Fukuoka, both of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Claims priority, application Japan, Mar. 14, 1970, 45/21215

Filed Mar. 9, 1971, Ser. No. 122,473

Int. Cl. F02d *11/10*

U.S. Cl. 123—102 **4 Claims**



An electronic governer for fuel-injection type internal combustion engines in which the speed regulation and "ungleich" effect may be achieved by means of control circuit and "ungleich" setting circuit, and there may be obtained a stable engine output characteristic for the full range of engine speeds from the low- speed to the high- speed by providing anti-overrun circuit and anti-hunting circuit, so that the possibility of hunting under low-speed operating conditions is completely avoided.

3,750,634

CRANKCASE VENTILATING SYSTEM FOR FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

Yasuo Nakajima, and Yukihiro Etoo, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited Yokohama City, Japan

Filed Oct. 22, 1970, Ser. No. 82,949

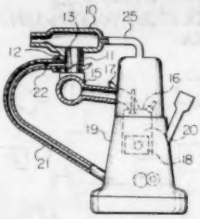
Claims priority, application Japan, Oct. 22, 1969 44/84430

Int. Cl. F02f *9/00*; F02m *25/06*

U.S. Cl. 123—119 B **3 Claims**

A crankcase ventilating system adapted to effectively reduce the amount of hydrocarbon exhaust during idling and

decleration. This system has a first conduit through which blow-by gases containing water and gasoline vapors in the crankcase enter the throttle chamber upstream of the throttle valve. The first conduit is provided with an orifice which controls the flow therethrough. A second conduit is provided to introduce fresh air from the air cleaner to the crankcase. During idling and deceleration the throttle valve is held in the fully



closed position so that the blow-by gases are prevented from entering the engine. Under these conditions, only a small amount of blow-by gases is caused to flow into the air cleaner through the second conduit by an extremely small negative pressure existing in the air cleaner. Thus, the amount of hydrocarbon exhaust during idling and deceleration is remarkably reduced.

3,750,635

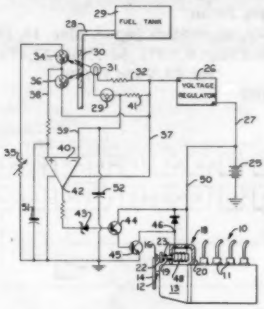
AUTOMATIC ADJUSTMENT FOR FUEL RACK STOP

John L. Hoffman, and Gerald E. Whitehurst, both of East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,512

Int. Cl. F02d *1/00*

U.S. Cl. 123—140 MC **10 Claims**



Control means for adjusting the fuel setting of an internal combustion engine comprises means for measuring the heat value of a fuel by detecting differences in the light transmission characteristics between different fuels, and initiating a signal in response thereto. The signal activates control means for altering the fuel setting in accordance with such heat value.

3,750,636

APPARATUS FOR THE CONTROL OF FUEL INJECTION FOR AN INTERNAL COMBUSTION ENGINE

Takao Okura, Oi-machi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

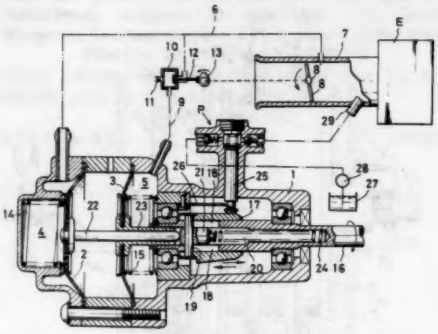
Filed Dec. 29, 1971, Ser. No. 213,267

Claims priority, application Japan, Dec. 31, 1970, 45/123276

Int. Cl. F02d *11/08, 1/06*

U.S. Cl. 123—140 MP **7 Claims**

Apparatus for the control of a fuel injection type internal combustion engine comprising a first negative pressure governor arranged to be operated by the negative pressure of the engine to control the amount of fuel injection of a fuel injection pump depending on the negative pressure force. A second



negative pressure governor is arranged to operate the amount of fuel injection of the fuel injection pump to increase the amount of fuel injected according to increase in the engine speed after the throttle valve has been opened wide.

3,750,637

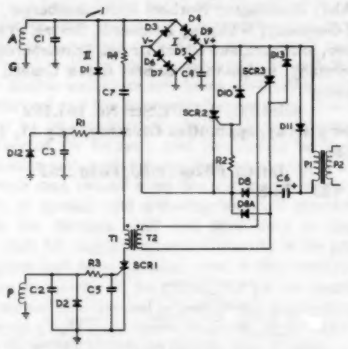
ALTERNATOR-RECTIFIER ELECTRONIC CHARGING AND DISCHARGING APPARATUS FOR IGNITION SYSTEMS AND THE LIKE

Floyd M. Minks, Rt. 1 Box 66, Kissimmee, Fla.

Filed Sept. 7, 1971, Ser. No. 178,323

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **13 Claims**



This disclosure deals with a novel impulse producing apparatus for ignition systems and the like involving a full-wave rectifier charging circuit discharged by solid-state switching means and controlled by a half-wave rectifying circuit that prevents failure to turn off the switching means.

3,750,638

TRANSISTORIZED IGNITION DEVICE OF AN INTERNAL COMBUSTION ENGINE

Matsuo Tanaka, Higashi-Osaka, Japan, assignor to Nippon Denon Co., Ltd., Osaka, Japan

Filed Mar. 27, 1972, Ser. No. 238,454

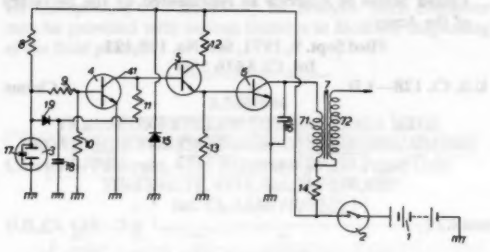
Claims priority, application Japan, June 19, 1971, 46/52826

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **3 Claims**

A transistorized ignition device for an internal combustion engine. A dc power source, an engine switch, a grounded contact point, an ignition coil, and an ignition transistor are connected in series for supplying an electric current to a primary winding of said ignition coil from said dc power source when

the circuit is conducting. A controlling transistor is coupled in the circuit for controlling the operation of the ignition transistor, the controlling transistor being switched according to opening and closing of the contact point and holding the ignition transistor in a non-conducting state when the contact point is in an open position. A capacitor is connected in parallel with the contact point and is charged when the contact



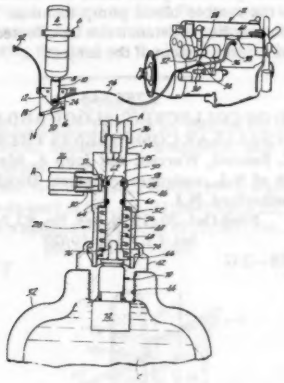
point is in the open position. The capacitor is further connected to the output of the controlling transistor, and a diode is connected between the capacitor and the contact point in the forward direction relative to the charging current for the capacitor. Upon the closing of the contact point the ignition transistor is made conductive by means of the charge on the capacitor.

3,750,639

SYSTEM FOR CONTROLLING ENGINE PRIMING FLUID FLOW

William J. DiGirolamo, Prospect Heights, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 18, 1971, Ser. No. 199,926
Int. Cl. F02m *1/16*
U.S. Cl. 123—187.5 **4 Claims**



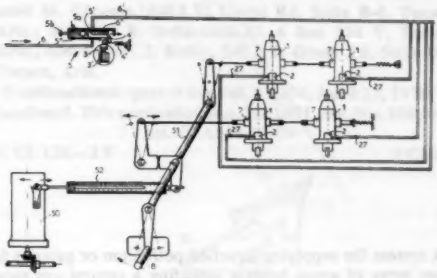
A system is provided for automatically shutting off the flow of diethyl ether to an internal combustion engine after the temperature of the engine cooling system has reached a predetermined point. The diethyl ether is used as a cold weather diesel engine starting aid and is injected in vapor form directly into the air intake manifold and into the engine cylinders for firing by the reduced auto-ignition temperature of diethyl ether with respect to diesel fuel. The engine shut-off temperature is in a range which indicates that the engine is sufficiently warmed-up to be self sustaining through use of its normal fuel. The system prevents unwarranted and harmful excessive use of the starting aid.

3,750,640

EMERGENCY STOPPING DEVICE FOR A FUEL-INJECTION INTERNAL COMBUSTION ENGINE

Karl Walter Kuhn, Saint-Germain-en-Laye, France, assignor to Societe D'Etudes De Machines Thermiques, Saint-Denis, France

Filed Nov. 22, 1971, Ser. No. 201,004
Claims priority, application France, Dec. 31, 1970, 7047558
Int. Cl. F02b *77/00*
U.S. Cl. 123—198 D **3 Claims**



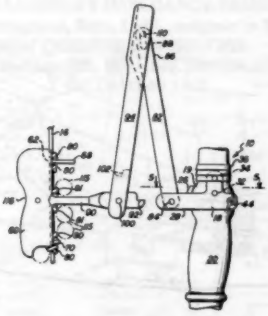
In an internal combustion engine of the fuel-injection type fed with fuel by injection pumps, each pump comprising a piston operated by an actuating mechanism releasably connected thereto and with tripping means adapted to slow down and to stop the engine in case of overspeed, at least one servo-motor operated by said tripping means for acting upon said fuel-injection pumps, an emergency stopping arrangement wherein each one of said pumps is provided with an individual servo-motor acting directly upon the piston of said pump to disconnect said piston from its actuating mechanism.

3,750,641

COLLAPSIBLE BOW ARM REST

James C. Ramsey, P.O. Box 36, Lincoln, N. Mex.

Filed Mar. 28, 1972, Ser. No. 238,911
Int. Cl. F41b *5/00*
U.S. Cl. 124—23 **15 Claims**

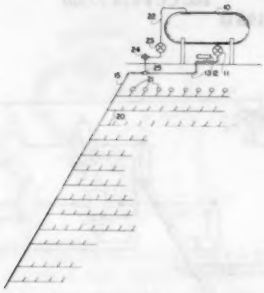


A collapsible bow arm rest extending between the mid-portion of a bow and a pull handle located rearwardly of the bow mid-portion that is secured to the ends of the bow and extends rearwardly of the bow string mid-portion. The bow arm rest is extended from a folded position, along a straight line, to an extended and locked condition. When in the locked condition the front and back arms are prevented from collapsing.

3,750,642
ORCHARD HEATING SYSTEM AND BURNER

Sigmund H. Machlanski, c/o John E. Wagner, 1041 E. Green St., 202/Pasadena, Calif.

Filed Mar. 17, 1971, Ser. No. 125,053
Int. Cl. A01g *13/06*
U.S. Cl. 126—59.5 28 Claims

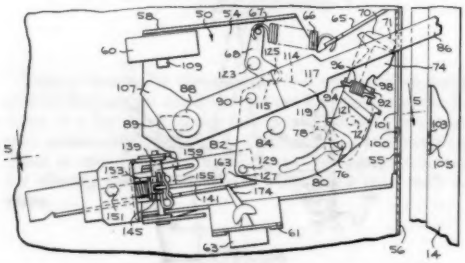


A system for supplying liquefied petroleum or gaseous fuel to an array of grove heaters including a central gas supply valving distribution system and thermostatic control. The system includes a number of high efficiency heaters, each with a shielded pilot flame burner and assembly and automatic cutoff valve in the event of pilot flame extinguishment. The burner includes a helical flame path in intimate contact with a tubular body member constituting horizontal radiating surface and a top diffuser cover for optimum heat distribution in a horizontal direction. The burner assembly includes a shielded pilot flame with a continuous metal flame attachment member for insuring the expansion of burner flame from pilot to full flame in full operation without flameout. The burner includes a temperature responsive valve which is effective and readily adjustable in the field.

3,750,643
MULTIPLE POSITION DOOR LATCH MECHANISM

Roland V. Fowler; James A. White, and David C. Cross, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 23, 1972, Ser. No. 256,093
Int. Cl. F23m *7/00*; F24c *15/04*
U.S. Cl. 126—197 13 Claims

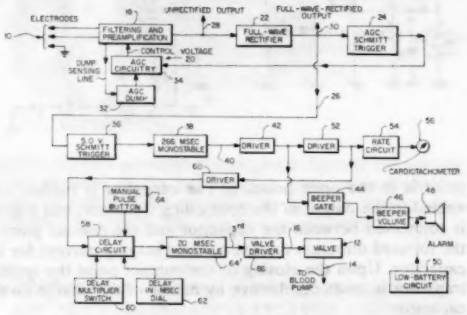


A three-position, sliding latch mechanism for an appliance door such as an oven door. The mechanism includes a latch handle and a hidden latching bolt for swinging out and engaging the door. The first position of the latch mechanism is an unlocked position, and the second position is a locked position. The third position is also a locked position, although the latching bolt remains stationary in this locked position as the latch handle is moved between the second and third positions. There are separate interlock switch means that are operable in either the first (unlocked) or the second and third (locked) positions, whereby different oven operations may be performed as a function of the various positions of the latch handle so as to simplify the control circuitry and components.

3,750,644
CARDIAC PROGRAMMER FOR A CORONARY BLOOD PUMP

Charles W. Ragsdale, Laramie, Wyo., assignor to the United States of America as represented by the Secretary of the Army

Filed Sept. 9, 1971, Ser. No. 179,122
Int. Cl. A61b *5/04*
U.S. Cl. 128—1 D 5 Claims

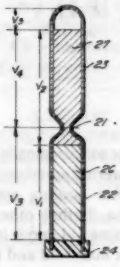


A programmer system is disclosed for driving a complementary coronary blood pump disposed at a non-thoracic location in delayed synchronism with the electrocardiogram waveform of a subject. Selected characteristics of the electrocardiogram signal are utilized to provide a control pulse, which control pulse actuates a valve mechanism to effect operation of the blood pump. The control pulse is generated by the system after a predetermined time period from the occurrence of the selected electrocardiogram characteristics, the time delay being substantially equal to the propagation time of a coronary ventricular pressure pulse from the thorax region of the subject to the remote blood pump location. In this manner, synchronous cardiac assistance can be effected at any suitable point in the arterial system of the subject.

3,750,645
METHOD OF COLLECTING BLOOD AND SEPARATING CELLULAR COMPONENTS THEREOF

Michael C. Bennett, Warren, and John A. Mattaliano, Secaucus, both of N.J., assignors to Becton, Dickinson and Company, Rutherford, N.J.

Filed Oct. 20, 1970, Ser. No. 82,240
Int. Cl. A61b *19/00*
U.S. Cl. 128—2 G 14 Claims



A separator tube which allows the separation of serum or plasma from the cells in blood to avoid contamination of the serum or plasma by the red cells. The tube is divided into two chambers formed by a constriction in the tube, which constriction has an inside diameter sufficient to allow the passage

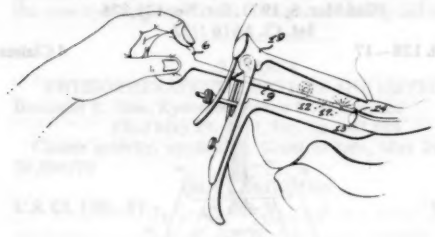
of serum or plasma, but not so large as to prevent the formation of an "air lock" between the chambers when the tube containing the blood is held horizontally. Blood is introduced into the tube, the tube is centrifuged or allowed to settle so that the cells go to the one end and the serum or plasma goes to the other end, the tube is fractured at the constriction into two containers, leaving only serum or plasma in one container and cells in the other. The container holding the serum or plasma can be closed with a stopper, cap or sealing material for transporting to a laboratory for analysis. Such container may be provided with various features to facilitate dispensing of the fluid portion.

3,750,646

TRANSPORT SYSTEM FOR BACTERIA WITH PROVISIONS FOR CARBOGENOPHILIC ORGANISMS

Charles C. Patterson, 4315 Ridgecrest Dr., El Passo, Colo.

Filed Dec. 16, 1971, Ser. No. 208,620
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **3 Claims**



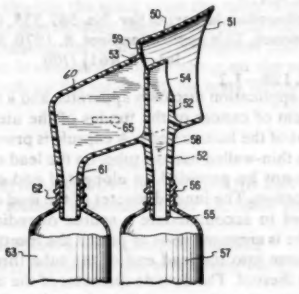
The present invention pertains to instruments for the collection and transport of bacterial specimens and more particularly to means for collection of body secretions, comprising a collapsible bulb filled with a gas, a flexible tubular extension carried by the bulb, wherein the interior of the tubular extension is in communication with the interior of the bulb, and means for carrying a culture medium for bacteria at the free end of said extension, and wherein said extension is extendable upon exhausting the gas from the interior of the bulb.

3,750,647

MEANS FOR COLLECTING SPECIMENS OF URINE

Donald M. Gleason; Manfred R. Bottaccini, and Robert J. Reilly, all of Tucson, Ariz.

Division of Ser. No. 108,766, Jan. 22, 1971, which is a continuation-in-part of Ser. No. 31,204, April 23, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,632
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 F **6 Claims**



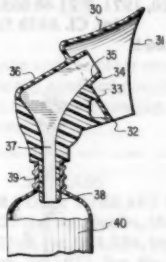
Apparatus for obtaining specimens of urine from a human female uncontaminated by external impurities, and which the patient may use by herself, without assistance by anyone. Invention is characterized by separating the initial discharge from the midflow stream, and collecting samples of the latter. Various embodiments of the invention are disclosed, (1) based on discovery that initial discharge and midflow stream issue at widely different velocities and follow different trajectories; (2) based on first disposing of the initial discharge and then, after a short interval, directing the stream into a receptacle.

3,750,648

MEANS FOR COLLECTING SPECIMENS OF URINE

Donald M. Gleason, 5402 E. Grant Rd. Suite B-4, Tucson, Ariz.; Manfred R. Bottaccini, Rt. 6 Box 326 V, Tucson, Ariz., and Robert J. Reilly, 5402 E. Grant Rd. Suite B-4, Tucson, Ariz.

Continuation-in-part of Ser. No. 31,204, April 23, 1970, abandoned. This application Jan. 22, 1971, Ser. No. 108,766
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 F **5 Claims**



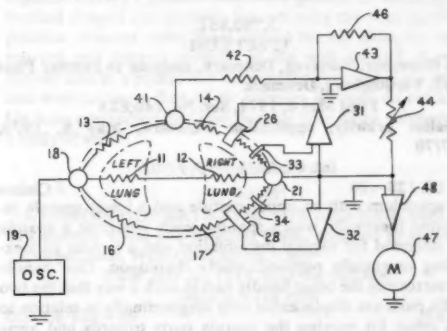
A device for collecting, from human females, specimens of urine substantially free from external contamination. The device includes a hollow body having a mouth adapted to be placed around the meatus of the female and between the labia, a conduit passing through one wall of the hollow body and having an opening at one end thereof within the hollow body and completely spaced from the walls of the hollow body for receiving the high trajectory uncontaminated portion of the urine flow, a collecting vessel at the other end of the conduit for collecting the uncontaminated urine, and means for separately conducting the urine flow not entering the opening.

3,750,649

PULMONARY IMPEDANCE BRIDGE

John W. Severinghaus, Ross, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed June 25, 1971, Ser. No. 156,667
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 Z **5 Claims**



Apparatus for measurement of lung resistance includes a low voltage and high frequency power supply connected to a

driver electrode contacting one side of a chest with a detector electrode contacting the opposite side of the chest and a pickup electrode engaging the chest therebetween. A variable resistor is connected with other resistors between the detector and pickup electrodes to form a bridge circuit with a portion of the lung resistance and a meter connected to the detector electrode indicates bridge balance whereat the resistance of the variable resistor is equal to the resistance of a portion of the lung. A guard ring about the detector electrode has segments thereof driven by operational amplifiers from the detector electrode to substantially eliminate skin potential gradients laterally of the detector.

3,750,650

DOUBLE SPIRAL ELECTRODE FOR INTRA-CAVITY ATTACHMENT

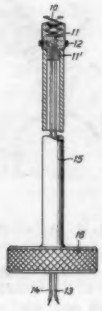
Helge Ruttgers, Heidelberg, Germany, assignor to Hewlett-Packard GmbH, Boblinger, Germany

Filed Dec. 13, 1971, Ser. No. 207,421

Claims priority, application Germany, Dec. 15, 1970, P 20 61 593.4; Aug. 10, 1971, P 21 40 065.7

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 E **4 Claims**



An electrode device is configured for mounting at or within parts of the human body, especially for obtaining ECG signals from a fetus. The electrode device includes two spiral pointed catcher elements displaced by 180° which are mounted in an insulating carrier. A counter electrode in the form of a tubular metal guiding element surrounds the carrier and protects the vagina and the fetus when the pointed catcher elements are introduced. A cannula may be provided at the electrode device so that liquid medicine or an electrolyte can be supplied to the fetus simultaneously with measuring ECG signals. The electrode device is introduced into the vagina by means of a guiding element.

3,750,651

SPECULUM

Max Brammer, Naestved, Denmark, assignor to Panther Plast A/S, Vordingborg, Denmark

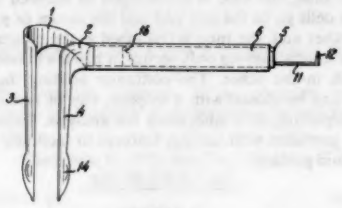
Filed May 6, 1971, Ser. No. 140,823

Claims priority, application Denmark, May 8, 1970, 2367/70

Int. Cl. A61b *1/30, 17/02*

U.S. Cl. 128—20 **4 Claims**

A speculum with an upper spatula and a lower spatula interacting therewith, which spatulas each comprise a spatula part intended for vaginal introduction and a handle part extending essentially perpendicularly thereupon. One handle part surrounds the other handle part in such a way that the two handle parts are displaceable only longitudinally in relation to each other for moving the spatula parts towards and away from each other and the surrounded handle part has at its end facing away from the spatula a longitudinally extending slot for accommodating an arresting body which is adapted, by being introduced into the slot, to effecting an expansion of the surrounded handle part in order to prevent any movements of



said surrounded handle part in relation to the surrounding handle part.

3,750,652

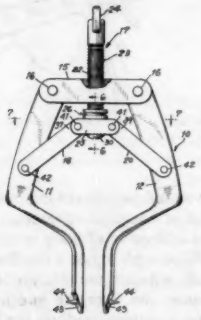
KNEE RETRACTOR

John M. Sherwin, 246 N. Gate Rd., Manchester, N.H.

Filed Mar. 5, 1971, Ser. No. 121,276

Int. Cl. A61b *1/32*

U.S. Cl. 128—17 **4 Claims**



This disclosure relates to a surgical retractor for use by an orthopedic surgeon for a controlled distraction of a knee joint through an anterior incision. This retractor generally consists of a pair of screw actuated retractor arms, the tips of which are operatively embedded in the intercondylar region of the patient's knee.

3,750,653

IRRADIATORS FOR TREATING THE BODY

Norman Simon, Scarsdale, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation-in-part of Ser. No. 587,335, Oct. 17, 1966, abandoned. This application Sept. 8, 1970, Ser. No. 70,311

Int. Cl. A61j *1/00*

U.S. Cl. 128—1.2 **25 Claims**

This application discloses apparatus and a technique for the treatment of cancer of the fundus of the uterus and of other portions of the human body. A capsule is provided which comprises a thin-walled narrow tube, on the lead end of which may or may not be provided an elongated and enlarged bulbous body portion. The inner diameter of the lead end of the tube is sufficient to accommodate a source of radioactive material. The tube is arranged so as to permit the insertion of a radioactive source into the lead end of the tube through the trailing portion thereof. The outside diameter of the tube is no greater than 2 mm. so as to permit the tube to be retained within and tolerated by a portion of the human body into which the tube is to be inserted. Furthermore, due to the aforementioned small diameter of the tube, the portion of the human body may

be packed with a number of such capsules. Due to the small internal diameter of the tube, a radioactive source whose

specific activity is higher than that of radium is implanted in the tube by being introduced through the trailing end thereof.

3,750,654

PHYSIOTHERAPEUTIC DEVICES AND METHODS

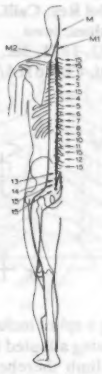
Desmond K. Shiu, Rystwood, Forest Row, England

Filed May 27, 1971, Ser. No. 147,589

Claims priority, application Great Britain, May 29, 1970, 26,008/70

Int. Cl. A61h *15/00*

U.S. Cl. 128—57 **9 Claims**



A roller of circular cross-section having a length approximately equal to the width of the back of a normal adult man or woman and having two rounded, circumferential projections so spaced as to straddle the spine when the roller is placed on the floor, and the user reclines, back down, on the roller; and a method of stimulating the first lines of bladder meridian in which the roller is caused to course along on the said lines while the user rolls on the roller with his body weight applied thereto.

3,750,655

VIBRATION MASSAGING METHOD AND DEVICE

Gert Frederick Kolbel, Hanebuthwinkel 15, 3000 Hannover, Germany

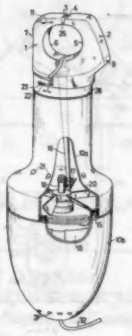
Filed Nov. 8, 1971, Ser. No. 196,653

Claims priority, application Germany, Nov. 10, 1970, P 20 55 119.3

Int. Cl. A61h *7/00*

U.S. Cl. 128—59 **9 Claims**

A vibratory method and device, particularly for the massage of the skin of the face. It achieves an improvement of blood circulation in the skin portions by generating a locally confined opposing pressure. The device comprises massaging components having the form of curved tongs and being positioned opposite each other, one of the components being con-



nected to a vibratory drive and the other component facing it, serving to generate a locally confined counterpressure, of adjustable construction to form any given gap between the ends of the massaging components.

3,750,656

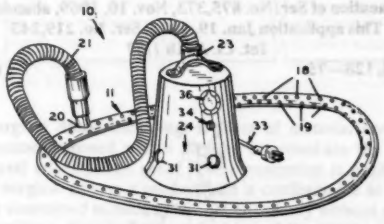
AGITATOR FOR A THERAPY BATH

Curtis M. Vaughan, 2021 Harlem, Joplin, Mo.

Continuation-in-part of Ser. No. 861,234, Sept. 26, 1969. This application Apr. 29, 1971, Ser. No. 138,498

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **1 Claim**



A flexible hose with a sufficiently thick wall that will not collapse under the weight of a person or small radius return bends; having a continuous circular like length; opposite portions of the flexible hose may be bent or manually pulled together having a general length of a person; tie members with hooked shaped end portions for retaining the hose portions in position, rows of outlet holes spaced therein along the normal upward and inward portions of the wall thereof. A motor-blower unit in a plastic like housing for generating air pressure and maintaining a flow of air pressure through an extra flexible hose connected into said flexible hose when submerged in a body of water.

3,750,657

COMBINATION BATH AERATOR AND HAIR DRYER

T. Goodwin Lyon, Los Angeles, Calif., assignor to Relaxaway Corporation, West Los Angeles, Calif.

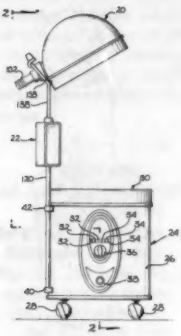
Filed July 22, 1971, Ser. No. 165,000

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **6 Claims**

A combination bath aerator and hair dryer using a single warm air blower unit which further serves as the seat and provides the required support for the hair dryer dome. The warm air blower unit has a lower chamber having an electrically

driven blower and air heater therein, with various controls and an attachment for a flexible hose thereon for connection to the hair dryer unit or the bath aerating unit, and further has a provision for attachment of the hair dryer unit for adjustable



support in functional disposition over the seat. The bath aerating unit is a disassembleable ring which is adapted to fit around the bottom edge of a bathtub and to connect to the flexible hose to direct the warm air into the bath water through a plurality of holes in the ring.

3,750,658

CERVICAL SPINE TRACTION APPARATUS

W. John Dawson, Jr., 6543 Golden Valley Rd., Minneapolis; Mary Lou Reyburn, 4530 W. 38th St., Saint Louis Park, and Richard F. Roettger, 10512 Johnson Rd., Bloomington, all of Minn.

Continuation of Ser. No. 875,373, Nov. 10, 1969, abandoned. This application Jan. 19, 1972, Ser. No. 219,143

Int. Cl. A61h *1/02*

U.S. Cl. 128—75 **1 Claim**

A cervical spine traction apparatus is disclosed which is used with a door and its upper frame to provide an anchor point having a harness with a pair of vertically extending load straps and a dorsal member that may be opened to admit the head of the patient with relative ease, the harness being secured to a pair of webbing members lying flat between the upper edge of the door and its mating frame while the door is closed and being laterally spaced by a crossbar secured to the loading straps, the webbing members being releasably secured to a transverse bar adapted to bear against the opposite upper face of the door from that of the harness to anchor the apparatus to the top of the door.

3,750,659

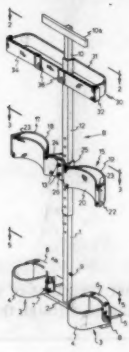
ORTHOPEDIC APPARATUS FOR LEGS TO ENABLE STANDING

David C. Loomans, 410 Hawthorn Dr., West Bend, Wis.

Filed May 1, 1972, Ser. No. 249,351

Int. Cl. A61f *3/00*

U.S. Cl. 128—80 R **3 Claims**



An orthopedic upright leg brace which enables a person to stand in an upright manner and in which the individual can be easily secured. A free standing parallel bar support is also provided and used in conjunction with the leg brace.

3,750,660

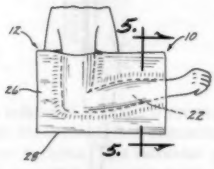
METHOD AND MEANS FOR MAKING A SPLINT

Louis F. Muller, Playa Del Rey, Calif., assignor to Medical Enterprises, Inc., Des Moines, Iowa

Filed Aug. 23, 1971, Ser. No. 173,865

Int. Cl. A61f *5/04*

U.S. Cl. 128—89 R **6 Claims**



The means for making a splint includes a sheet member having opposite faces and being adapted for folding into two flaps. The flaps embrace the limb therebetween and include marginal portions which are free from engagement with the limb when the limb is between the flaps. The marginal portions are in face-to-face relation when the limb is between the flaps and an adhesive substance is on the flap portions. The adhesive substance is adapted to secure the flaps in face-to-face engagement when the flaps are manually pressed together.

The method for splinting an injured limb includes positioning two flaps on opposite sides of the injured limb and pressing the flaps together into engagement around the limb at a plurality of points so that the adhesive substance on the flaps will secure the flaps together and cause them to confine the limb and hold the limb against flexing movement.

3,750,661

INTRAUTERINE CONTRACEPTIVE DEVICE

Max Knoch, Djalan Rangga Malela 15, Bandung, Indonesia

Filed Oct. 13, 1970, Ser. No. 80,313

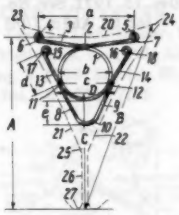
Claims priority, application Netherlands, Oct. 14, 1969, 6915483

Int. Cl. A61f *5/46*

U.S. Cl. 128—130 **8 Claims**

The present contraceptive intra-uterine device includes a V-shaped member and a cross member both of which are con-

nected to a ring member so that the ring member is located inside a configuration substantially resembling a triangle formed by the V-shaped member and by the cross member. Said triangle having such a size and shape relative to the uterus size that a definite clearance is provided between the lateral sides of the triangle and the respective opposite wall of the uterus, said clearance extending all around the triangle.



3,750,662

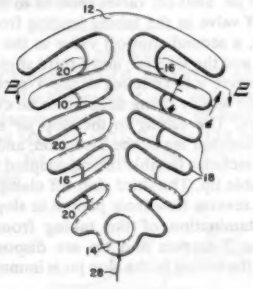
INTRAUTERINE CONTRACEPTIVE DEVICE

Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed June 23, 1971, Ser. No. 155,768

Int. Cl. A61f 5/46

U.S. Cl. 128—130 **38 Claims**



An intrauterine contraceptive device made from plastic and having a central core defining an intrauterine device nose, tail, and a pair of lateral side portions, and including retrograde spurs each having a bulbous contour, the spurs being arranged along the core side portions and of varying length so as to define a generally inverted pear shaped intrauterine device. Thin webs may be formed between adjacent spurs to increase the area of the invention, and multiple rows of spurs may be formed on each core side for better retention of the intrauterine device in the uterine cavity. A talisman and withdrawal cord may be attached to either end of the core.

3,750,663

LITHOTOMY DRAPE

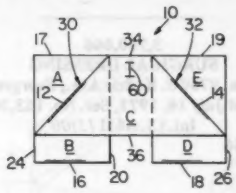
Robert F. Collins, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Nov. 24, 1971, Ser. No. 201,736

Int. Cl. A61f 13/00

U.S. Cl. 128—132 D **7 Claims**

A surgical lithotomy drape or the like is fabricated by folding flat sheet material to form legging pockets having folds at the bottoms of the pockets and having sealed edges along the sides of the pockets so that the depth of the pockets is controlled by the length of a central cross strip portion of the drape and is independent of the width of the remaining portion of the drape.



3,750,664

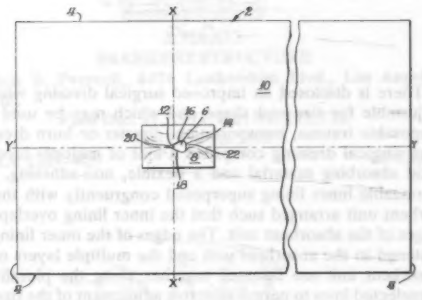
FENESTRATED SURGICAL DRAPE

Robert F. Collins, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Apr. 17, 1972, Ser. No. 244,437

Int. Cl. A61f 13/00

U.S. Cl. 128—132 D **19 Claims**



A surgical drape including, a sheet of material having a fenestration disposed within an area intermediate the outer peripheral edges of the sheet. The fenestration is positioned over a surgical site on a patient, and is conformable to an irregular contoured surface of the patient's body without excessive bunching, buckling or overlapping of the sheet material adjacent the fenestration. The fenestration thus remains sufficiently open during an operative procedure to provide access to the surgical site.

3,750,665

FLEXIBLE RESPIRATOR WITH INFLATABLE FRAME

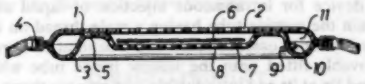
Fedor Stranicky, 29 Ankdammsgaten, 17143 Solna, Sweden

Filed June 21, 1971, Ser. No. 154,914

Claims priority, application Sweden, Sept. 8, 1970, 12197/70

Int. Cl. A62b 23/00

U.S. Cl. 128—146.6 **3 Claims**

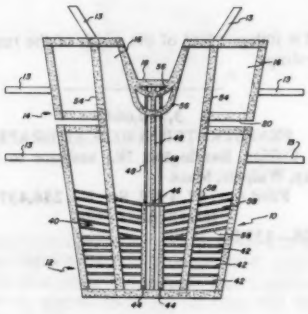


A respirator, i.e. a face mask provided with a filter for respiratory use, comprising a substantially ring-shaped inflatable frame consisting of tubular foil material supporting a flexible wall having a perforated central portion to which the filter is attached. The central portion of the wall is stretched in a

substantially planar state by the inflated frame and the filter is designed as a flexible disc-shaped pad covering the perforated portion of the wall.

3,750,666
SURGICAL DRESSING

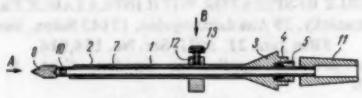
James F. Graham, 9760 S. Kedzie Ave., Evergreen Park, Ill.
Filed July 16, 1971, Ser. No. 163,369
Int. Cl. A61l *15/00*
U.S. Cl. 128—156 22 Claims



There is disclosed an improved surgical dressing which is adjustable for size and shape and which may be used as a disposable trauma, transportation, disaster or burn dressing. The surgical dressing comprises a unit of multiple layers of fluid absorbing material and a flexible, non-adhering, fluid permeable inner lining superposed congruently with the absorbent unit arranged such that the inner lining overlaps the edges of the absorbent unit. The edges of the inner lining are fastened to the absorbent unit and the multiple layers of the absorbent unit are fastened together along the plurality of preselected lines to permit selective adjustment of the size and shape of the dressing by cutting.

3,750,667
DEVICE FOR INTRAOSSEOUS INJECTION OF LIQUID SUBSTANCES

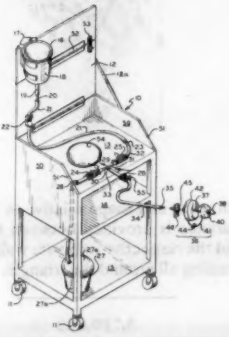
Nikolai Fedorovich Pshenichny, Khmelnilshoe 29, kv. 6, and Valentin Dmitrievich Maximov, ulitsa Krasnoznamennaya 9, both of Vinnitsa, U.S.S.R.
Filed Jan. 31, 1972, Ser. No. 221,926
Int. Cl. A61m *5/00*
U.S. Cl. 128—215 4 Claims



A device for intraosseous injection of liquid substances, wherein the outside tube having a male thread on its end introducible onto osseous tissue and a head at its opposite end, is movably fitted onto the hollow inside tube which has a pointed tip at its end introducible into osseous tissue, oper-end injection holes being provided in a close proximity to said pointed tip. Besides, the outside tube and the tip itself have on their sides facing each other claws or jags directed towards one another and adapted, when the device is being screwed into osseous tissue, to get in engagement with one another so as to close said injection holes and thus prevent them from being clogged with osseous tissue.

3,750,668
APPARATUS WITH DISPOSABLE PARTS FOR RAPID SUCCESSIVE ADMINISTRATION OF ENEMAS TO GROUPS OF PATIENTS

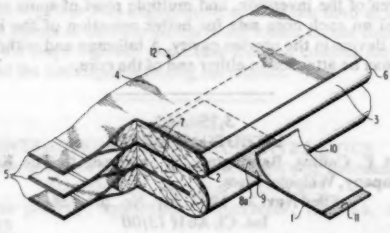
Theodore Perl, 58 Ely Dr., Fayetteville, N.Y.
Filed Dec. 15, 1971, Ser. No. 208,377
Int. Cl. A61m *3/00*
U.S. Cl. 128—227 3 Claims



Apparatus for administering enemas to patients in geriatric wards and nursing homes for the aged includes a wheeled cart having a receptacle for liquids to be administered and a slop jar for liquids excreted by patients during relief pauses in the administration. A disposable tip having a novel clamp for holding it in place is connected through a disposable T-section of tubing to tubing from the supply receptacle and also to tubing to the slop jar. Shut-off valves secured to the cart comprise a first shut-off valve in the tubing leading from the supply to the T-section, a second shut-off valve in the tubing between the T-section and the slop jar, and a third shut-off clamp valve adapted to receive a flexible leg of the T-section therein, the tubing from the supply being adapted to be connected to this flexible section. The tubing to the slop jar is adapted to be connected to another leg of the T-section, and the third leg of the T-section includes flexible tubing adapted to be connected to the disposable tip. The third shut-off clamp valve is always closed before reverse flow from patient to slop jar takes place whereby contamination of the tubing from the supply is prevented, the T-section and tip are disposable, and contamination of the tubing to the slop jar is immaterial.

3,750,669
DISPOSABLE DIAPERS WITH ADHESIVE FASTENING TAPES

Raymond F. DeLuca, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Apr. 13, 1972, Ser. No. 243,801
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 6 Claims



The disclosure concerns disposable diapers having fastening tapes featuring adhesive end portions extending beyond a release paper covering the remainder of the adhesive face of

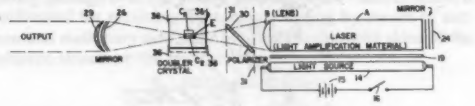
the tape, whereby the free end of the tape may be releasably attached, during manufacture or afterwards, to the diaper to hold this otherwise free end in place until it is to be used.

3,750,670

LASER CAUTERIZER

Paul N. Palanos, and Fred C. Unterleitner, both of Palo Alto, Calif., assignors to Medoptics, Inc., Palo Alto, Calif.

Filed Aug. 3, 1970, Ser. No. 60,492
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **10 Claims**



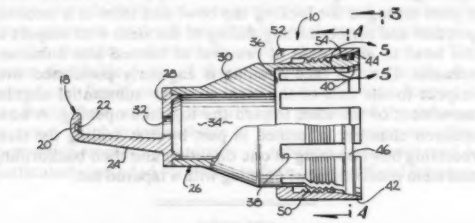
A laser with a light frequency transducer (typically of the frequency doubler type) within a lser cavity. The cavity is mirrored to reflect light at the lased frequency and to transmit light from the cavity at the transduced frequency. The laser is provided with a convex lens at its end adjacent the frequency transducer. Likewise, the cavity mirror adjacent the frequency transducer is provided with a concave reflecting surface. The convex lens in cooperation with the concave cavity mirror provides a necessary light pupil through the light frequency transducer for efficient frequency change and a collimated light path through the laser for efficient light emission. When utilized with a YAG laser and a silicon filter disposable into and out of the optic axis of the laser, a barium-sodium-niobate light frequency transducer can be heat tuned to provide a 6,600 angstrom lasing mode useful for repair of retinal detachment and a 5,320 angstrom mode useful for treating the retinal blood vessels of diabetics.

3,750,671

SURGICAL CUTTING TOOL ADAPTER APPARATUS

John R. Hedrick, La Crescenta, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1971, Ser. No. 129,767
Int. Cl. A61b *17/16, 17/32*
U.S. Cl. 128—305 **11 Claims**



An adapter apparatus for a cutting tool to permit only transverse cutting movement wherein the attaching section of the adapter apparatus includes a plurality of longitudinal slits, a friction washer located about the slits, a wedging sleeve being adjustably movable into contact with the friction washer to vary the diameter of the attaching section.

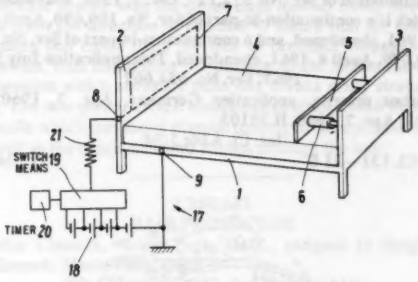
3,750,672

ARRANGEMENT FOR FORMING AN ELECTROSTATIC FIELD IN THE REGION OF A BED

Constantin Graf von Berckheim, Friedrichstr. 9, 694 Weinheim an der Bergstrasse, Germany

Filed May 15, 1970, Ser. No. 37,803
Claims priority, application Germany, May 20, 1969, P 19 25 522.2
Int. Cl. A61n *1/00*
U.S. Cl. 128—376 **13 Claims**

An arrangement for forming an electrostatic field in the region of a bed in which a pair of electrodes are arranged in the bed spaced from the head and body portion of a person resting therein, so that a voltage supply of about 200 volts connected



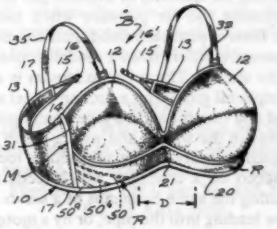
to the electrodes will create an electrostatic field at the region of the head of the person in order of 10^3 volts per meter.

3,750,673

BRASSIERE STRUCTURE

William B. Penrock, 4426 Lankershim Blvd., Los Angeles, Calif.

Filed Dec. 27, 1971, Ser. No. 212,518
Int. Cl. A41c *3/00*
U.S. Cl. 128—465 **10 Claims**



Means adapted to prevent those portions of a flat, vertical, horizontal band of a brassiere which occurs below the breast receiving cups of the brassiere from rolling and/or wrinkling upwardly, said means including vertical stiffening means in the band adjacent the lateral outer side of each cup and laterally inwardly and downwardly inclined, normally straight, flexible and resilient stays extending from the reinforcing means at points spaced above the lower end of the band to the bottom edge of the band at points below the cups.

3,750,674

TOBACCO PRODUCT

Charles W. Miller, Winston-Salem, N.C., assignor to R. J. Reynold Tobacco Company, Winston-Salem, N.C.

Filed Aug. 7, 1972, Ser. No. 278,285
Int. Cl. ; A24b *03/14, 15/00;*
U.S. Cl. 131—17 R **5 Claims**

Addition of succinic anhydride compounds to tobacco to enhance the flavor and/or aroma thereof.

3,750,675

METHOD AND APPARATUS FOR THE PRODUCTION OF TOBACCO RODS

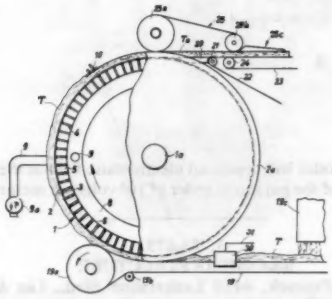
Kurt Klemme, Hamburg-Bergedorf, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany

Continuation of Ser. No. 512,127, Dec. 7, 1965, abandoned, which is a continuation-in-part of Ser. No. 100,690, April 4, 1961, abandoned, and a continuation-in-part of Ser. No. 100,699, April 4, 1961, abandoned. This application July 17, 1967, Ser. No. 654,002

Claims priority, application Germany, Apr. 7, 1960, H 39102; Apr. 7, 1960, H 39103

Int. Cl. A24c *5/34*

U.S. Cl. 131—21 B 11 Claims



A tobacco filler rod of substantially constant density and cross section is obtained by compressing a moving tobacco stream by an air current, determining the presence or absence of differeneces between the pressure of the air current after the latter has passed through the stream and a predetermined pressure, measuring the quantity of tobacco per unit length of the stream, adjusting the air pressure when the measured quantity differs from a predetermined quantity and/or when the measured pressure differs from a predetermined pressure, and trimming the stream. The tobacco stream is arranged to be fed into a peripheral groove on a suction wheel and the suction is measured and controlled in a pipe communicating with a suction chamber in the wheel, and with a pump or the like. The predetermined quantity can be adjusted by measuring the quantity of tobacco on a conveyor which feeds the suction wheel and adjusting the same by means of a servo-motor connected to a valve leading into the pipe, or by a motor and gear-operated bellows system which is responsive to pressure in the pipe and which also controls the servo-motor. The servo-motor can be controlled directly by the stream detector.

3,750,676

METHOD AND MACHINE FOR THE PRODUCTION OF CIGARETTE PACKS OR THE LIKE

Friedel Kruse, Hamburg; Gunter Wahle, Reinbeck; Otto Erdmann, Hamburg, and Willy Rudszinat, Dassendorf, all of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

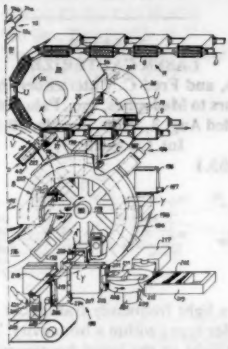
Filed Oct. 28, 1970, Ser. No. 84,857

Claims priority, application Great Britain, Oct. 29, 1969, 53,015/69

Int. Cl. A24c *1/30, 5/35*; B65b *47/00*

U.S. Cl. 131—25 30 Claims

A cigarette packing machine wherein empty packs or their component parts are withdrawn from the respective magazines only when a detector determines the presence of a block of cigarettes which are being transported to a pack filling station. The detector then causes the transfer of a prefabricated empty pack from its magazine to the filling station or the conversion of one or more blanks into an empty pack and the transfer of such pack to the filling station. Each block of cigarettes is introduced into and enclosed in that pack whose transfer from the magazine to the filling station or



whose making from one or more blanks was initiated in response to detection of the particular block.

3,750,677

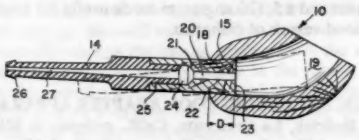
SMOKING PIPE AND METHOD OF MANUFACTURE

Joseph J. L. Jodoin, 221 Merriam St., Weston, Mass.

Filed Nov. 8, 1971, Ser. No. 196,377

Int. Cl. A24f *05/00*

U.S. Cl. 131—172 5 Claims



A smoking pipe has a bowl with a top face opening through which tobacco is positioned and a lower stem receiving bowl opening. An elongated stem is releasably joined to the bowl at a joint arranged for locking the bowl and stem in a smoking position and for permitting sliding of the stem with respect to the bowl to allow ease of removal of burned and unburned tobacco. The top face opening is angularly positioned with respect to the axis of the stem to allow substantial angular movement of the stem toward the top face opening. A bowl tobacco chamber is formed in part by first drilling the stem receiving bowl opening in one direction and then backdrilling said stem receiving bowl opening with a tapered bit.

3,750,678

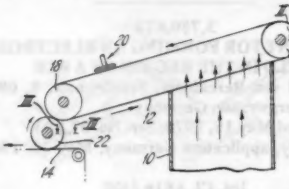
CIGARETTE MAKING MACHINES

Francis A. M. Labbe, Neuilly-sur-Seine, France, assignor to Molins Machine Company Limited, London, England

Filed June 16, 1970, Ser. No. 46,596

Int. Cl. A24c *5/18*

U.S. Cl. 131—84 C 18 Claims



A cigarette making machine comprises an air-pervious conveyor band having two runs extending around two spaced pul-

leys and arranged to receive a tobacco stream on one of the runs which tobacco stream is retained thereon by suction. After passing around one of the pulleys and while passing along the second run of the band, the tobacco stream is trimmed after which it is transferred by a transfer wheel to a continuous wrapper web in which the tobacco stream is enclosed to form a continuous cigarette rod. At least one pulley has spaced side walls for supporting the opposite longitudinal edges respectively of the band so that suction passing through the foraminous band and spaced between the side walls will retain the filler stream on the band against centrifugal force during passage over the pulley. The rim of the transfer wheel is perforated for retaining the tobacco stream by means of suction and stationary side walls confine the opposite sides of the tobacco stream on the transfer wheel.

3,750,679

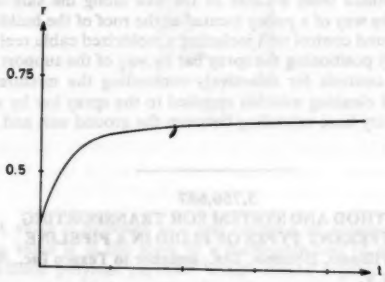
METHOD IN THE UTILIZING OF TOBACCO WASTE

Erik Arne Wallberg, Jonkoping, Sweden, assignor to Industrielaboratoriet Aktienbolag, Jankoping, Sweden

Continuation of Ser. No. 712,158, March 11, 1968, abandoned. This application Dec. 30, 1970, Ser. No. 102,879

Int. Cl. A24b *3/14*

U.S. Cl. 131—140 C **5 Claims**



Tobacco waste is mixed with a liquid, such as water in the weight proportions 3:1 – 3:7 between tobacco and liquid, and the mixture is subjected in a preferably closed container to blow, pressure, or shock impulses of a high repetition frequency, for forming substantially water dissoluble lumps. The water dissoluble parts of these lumps are subsequently dissolved in a liquid such as water. The solution thus formed is separated from at least the principal portion of the tobacco material which is indissoluble in water, for forming an adhesive which consists principally of tobacco and water and is particularly intended for the manufacture of artificial tobacco.

3,750,680

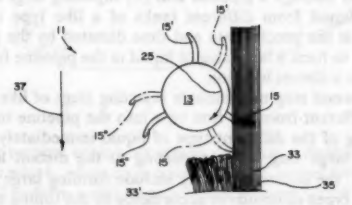
TEASING COMB

Benjamin L. Miller, 4523 Jamaica, Memphis, Tenn.

Filed June 12, 1972, Ser. No. 262,022

Int. Cl. A45d *24/00*

U.S. Cl. 132—11 R **8 Claims**



A comb for teasing hair during the preparation of a coiffure. The comb includes a cylinder having at least one row of teeth projecting radially therefrom. One embodiment includes a motor which is housed in the handle of the comb to rotatably drive the cylinder thereof. Placing the rotating cylinder of the comb adjacent a plurality of strands of hair is effective to cause the teeth to engage the strands of hair and to disengage the strands of hair with each rotation thereof. The teeth have an arcuate profile with the outer ends thereof being directed away from the direction of rotation to assure that the ends of the teeth slip freely from the hair to preclude entanglement therewith, thus minimizing the damage to the hair in the teasing process which normally pulls and breaks many strands of hair. The non-power driven embodiment of the comb includes a handle which facilitates manual turning of the cylinder when desired as the comb is caused to pass through the hair.

3,750,681

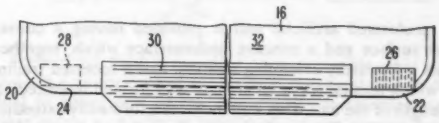
HAIR PROTECTOR

Maxine Claunch, Menlo Park, Calif., assignor to Ralph B. Claunch, Menlo Park, Calif.

Filed Mar. 20, 1972, Ser. No. 236,019

Int. Cl. A45d *8/40*

U.S. Cl. 132—49 **14 Claims**



A hair protector having a first portion for covering the hair and a second portion adapted to fit tightly across the forehead and the sides of the face to secure the hair protector in place on the head. The second portion includes a band of stretch knit material having a smooth surface for engaging and extending across the forehead without forming creases therein yet the band holds the protector from slipping downwardly and forwardly across the face during use. Several embodiments of the hair protector are disclosed including a shower cap adapted for use with a bouffant hairdo.

3,750,682

HAIR PIECES, WIG AND LIKE PRODUCTS

Joseph C. Bonafiglia, 124 Ivins Ave., Merchantville, N.J., and Harold Krieger, 61 W. School House Ln., Philadelphia, Pa.

Filed July 22, 1971, Ser. No. 165,372

Int. Cl. A41g *3/00*

U.S. Cl. 132—53 **3 Claims**

Hair pieces, wigs and like products in which the predominant hair-simulating fiber is a blend of nylon-6 and a polyalkyl methacrylate, method of making fiber, and fiber.

3,750,683

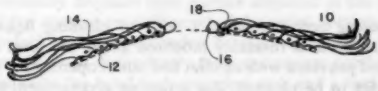
CROWNED ANNULAR HAIRPIECE WITH CENTRAL LOOPS

Elva Lee Desell, 919 Jamieson Rd., Lutherville, Md.

Continuation-in-part of Ser. No. 129,394, March 30, 1971, abandoned. This application May 16, 1972, Ser. No. 253,838

Int. Cl. A41g *5/00*

U.S. Cl. 132—55 **5 Claims**



A crowned annular-shaped hairpiece having an inner diameter dimensioned to fit around and expose the area in which hair growth radiates from the center of the crown of the human scalp, an outer diameter of skull cap dimension, and a

covering of hair or other stranded material, arranged to radiate away from the center of the annulus, the innermost strands of the hair being fixed in upright loops extended toward the center of the annulus and doubled back to radiate away from it is described; a method of simulating a growth of hair rising from the natural scalp is also disclosed.

3,750,684

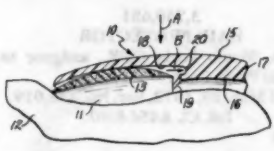
ARTIFICIAL NAIL AND METHOD OF APPLYING THE SAME

Dolores M. Russell, 1820 Alice St., Merrick, N.Y.

Filed July 13, 1972, Ser. No. 271,513

Int. Cl. A45d *40/30*

U.S. Cl. 132—88.5 **7 Claims**



A preformed artificial nail is provided having a convex upper surface and a concave undersurface which, together, define a forwardly extending free end and a recessed trailing end which terminates in an arcuate wall formed intermediate the length of the nail. This wall includes a forwardly extending groove positioned above the undersuface of the free end of the nail. A mass of viscous adhesive material is positioned atop the natural nail and the artificial nail is forced downwardly so that the adhesive fills the space between the natural nail and the undersurface of the artificial nail and a small excess thereof is exuded forwardly into the groove.

3,750,685

APPARATUS FOR CLEANING METALLIC ARTICLES

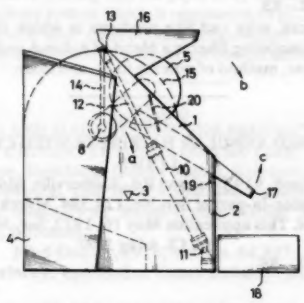
Manfred Brenneisen, Triberg, and Siegfried Guentert, Villingen, both of Germany, assignors to Schwanog, Schwarzwalder Normteile Siegfried Guntert K.G., Villingen, Schwarzwald, Germany

Filed Apr. 21, 1970, Ser. No. 30,430

Claims priority, application Germany, Oct. 27, 1969, G 69 41 681.5

Int. Cl. B08b *3/06*

U.S. Cl. 134—57 R **19 Claims**



A housing accommodates a body of cleaning liquid. An apertured drum is rotatably mounted above the level of the liquid and provided with an inlet and outlet opening for metallic articles to be cleaned. An actuating arrangement is provided for displacing the drum with reference to the housing to and from a position in which at least a portion of the drum periphery is immersed in the body of cleaning liquid. A drive rotates the drum at least when the same is in the aforementioned position.

3,750,686

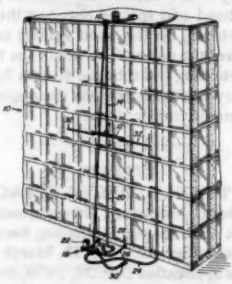
ASSEMBLY FOR WASHING BUILDING WINDOWS

Henry D. Cook, Atlanta, Ga., assignor to K & M Enterprises, Incorporated, Atlanta, Ga.

Filed Nov. 29, 1971, Ser. No. 202,869

Int. Cl. A47l *1/02*

U.S. Cl. 134—95 **10 Claims**



A window washing assembly comprising an elongated spray bar suspended from a cable or the like along the side of a building by way of a pulley located at the roof of the building, and a ground control unit including a motorized cable reel for selectively positioning the spray bar by way of the support cable, and controls for selectively controlling the mixture of water and cleaning solution supplied to the spray bar by way of a delivery hose extending between the ground unit and the spray bar.

3,750,687

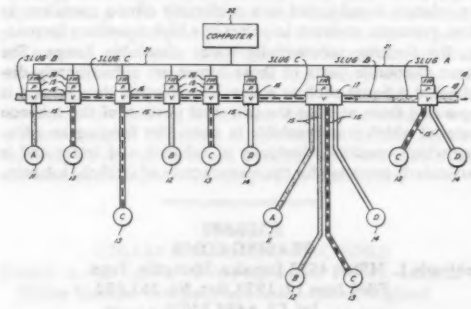
METHOD AND SYSTEM FOR TRANSPORTING DIFFERENT TYPES OF FLUID IN A PIPELINE

Jack C. Williams, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,411

Int. Cl. F16k *19/00*

U.S. Cl. 137—1 **16 Claims**



A method comprises (a) monitoring the exact rate of flow of a liquid through a pipeline and (b) injecting slugs of a like type of liquid from different tanks of a like type into the pipeline at the precise rate and time dictated by the pipeline flow rate to form a large slug of liquid in the pipeline for transporting to a distant location.

The second step may include injecting slugs of like type of liquid different from the first type into the pipeline to form a large slug of the different type of liquid immediately behind the first large slug for transporting to the distant location. Likewise, the second step may include forming large slugs of different types of liquids in accordance to the timing and flow rate dictated from the first step for forming one consecutive large slug of like liquids of one type after another consecutive large slug of like liquids of another type in the pipeline for

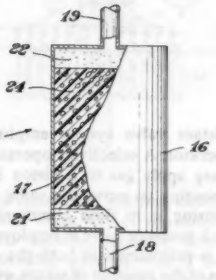
transporting to the distant location. An apparatus for practicing the method comprises a combination of valves and pumps for each tank and a computer responsive to the rate of liquid flow in the pipeline and distance to travel to the next tank for providing the arrival time.

3,750,688

VALVE AND METHOD FOR AQUEOUS SYSTEMS

Richard H. Hall, Midland; Daniel H. Haigh, Beaverton; Robert L. Derby, and Walter E. Jennings, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 26, 1972, Ser. No. 266,300
Int. Cl. B01d *13/00*
U.S. Cl. 137—2 **12 Claims**



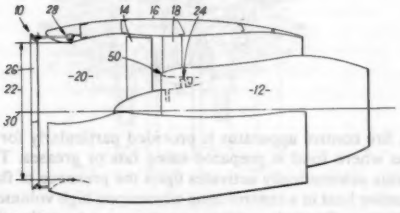
A valve is disposed in a line carrying an aqueous stream. The valve is in the form of a permeable bed of particulate swellable polymer particles which imbibe organic materials and on contact therewith will swell to provide a positive shutoff.

3,750,689

AIR INTAKE FOR A GAS TURBINE ENGINE

Jack Britt, Ambergate, England, assignor to Rolls-Royce (1971) Limited, London, England

Filed Sept. 11, 1972, Ser. No. 287,703
Claims priority, application Great Britain, Sept. 15, 1971, 42,900/71
Int. Cl. F02b *27/02*; F02k *11/00*
U.S. Cl. 137—15.1 **4 Claims**



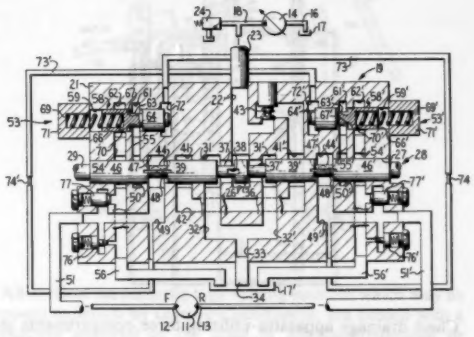
A gas turbine engine air intake cowl has a displaceable lip member which, when cross winds develop, moves forwardly of the cowl to form a slot therebetween through which the cross wind passes and is guided onto that intake wall on the windward side of the intake so avoiding pressure losses and bad air distribution in the intake.

3,750,690

FLUID MOTOR CONTROL CIRCUIT WITH OVERSPEED LIMITING MEANS

Thomas J. Bubula, and Kenneth R. Lohbauer, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1971, Ser. No. 207,350
Int. Cl. F16k *31/12*; F15b *11/04*
U.S. Cl. 137—106 **5 Claims**



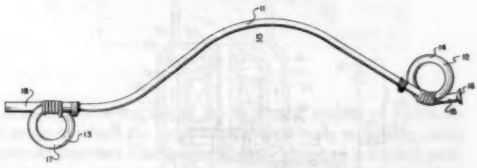
Pressurized fluid is supplied to a reversible fluid motor through a motor control valve which may be shifted to direct fluid to either port of the motor while communicating the other motor port with an individual exhaust passage for that port thereby providing for motor operation in either direction. A separate overspeed inhibiting vlave is disposed in each of the two exhaust passages and each responds to a pressure decrease in the fluid entering the motor by reducing the flow passage for fluid exhausting from the motor thereby maintaining a constant speed determined by the setting of the motor control valve. Disposition of the overspeed valves in the motor control valve exhaust passages rather than between the motor control valve and the motor avoids any need for a bypass check valve at each overspeed valve.

3,750,691

COMBINED PUMP AND PERMANENT SIPHON TUBE

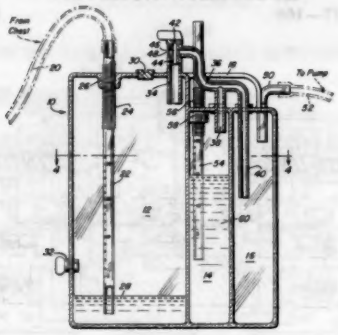
Ben B. Lidolph, Rt. No. 1, New Plymouth, Idaho

Filed Nov. 22, 1971, Ser. No. 203,102
Int. Cl. F04f *10/00*; F16l *43/00*
U.S. Cl. 137—142 **2 Claims**



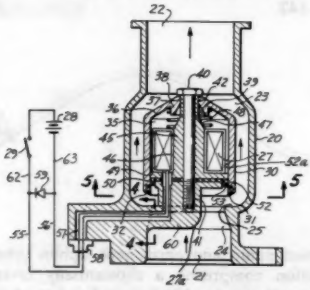
The combined pump and permanent siphon tube of the present invention comprising a substantially inverted U-shaped siphon conduit; a head lock including a conduit having a single-looped spiral portion upstandingly and parallelly disposed at one of the terminal ends of the siphon conduit, and a horizontally disposed tube portion disposed at the end opposite the conduit-receiving end of the spiral portion; and an orifice lock including a conduit having a single-looped spiral portion disposed dependently from the siphon conduit at its end opposite the head lock-engaging end, and a horizontally disposed tube portion disposed at the end opposite the siphon conduit-receiving end of the spiral portion. The combined pump and permanent siphon tube may be provided with a head lock and an orifice lock fabricated of flexible resilient material.

3,750,692
CHEST DRAINAGE SYSTEM
Eugene E. Tibbs, Hospital Dr., Cleveland, Miss.
Filed Jan. 11, 1972, Ser. No. 217,055
Int. Cl. A61m 1/00
U.S. Cl. 137—205 5 Claims



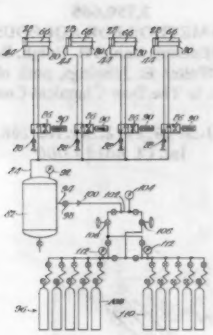
Chest drainage apparatus utilizing three compartments integrally formed within a single container to define a first water-sealed fluid-receiving chamber, a second pressure regulating chamber and a third trap chamber. A control valve is provided to selectively communicate or preclude communication between the first chamber and the remaining chambers. In addition, the first compartment includes a stopcock positioned therein above the level of the water seal for a selective draining of the compartment without requiring a dismantling of the apparatus. The pressure is regulated through a vertically adjustable tube communicated with the interior of the second chamber. All three chambers include stopper closed openings which can be used for the insertion or removal of water as well as a cleaning of the interior of the chambers.

3,750,693
SOLENOID OPERATED VALVE
Artson P. Hardison, Glendora, Calif., assignor to XAR Industries Incorporated, City of Industry, Calif.
Filed Oct. 13, 1971, Ser. No. 188,807
Int. Cl. F16k 31/06
U.S. Cl. 137—219 11 Claims



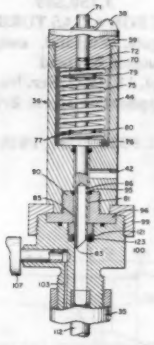
A solenoid operated valve for use within an aircraft fuel area which permits the air to enter an air intake at a forwardly-located point in the aircraft and then to flow through the valve and into the fuel tank to pressurize it for positive expulsion of the fuel from the tank to the engine. The valve is equipped with spring bias means to maintain it in a fail-safe open position, so that only when the solenoid is actuated does the valve close and remove ram air pressure from the fuel in the tank. The valve is balanced so that differential pressures across it do not tend to open it, its operation being a function only of spring bias and energizing of a solenoid winding.

3,750,694
VALVE OPERATOR
Donald G. Fawkes, Aurora, Ill., assignor to Henry Pratt Company, Aurora, Ill.
Filed Aug. 9, 1971, Ser. No. 170,236
Int. Cl. F16k 31/143
U.S. Cl. 137—236 6 Claims



A seepage-resistant valve system employing a pressure operated valve operator. A selectively operated valve position control system may apply gas to a piston in a cylinder associated with a housing to move the same to control valve position. The housing is in fluid communication with the cylinder and a back pressure valve is employed so that a positive gas pressure is maintained in both the cylinder and the housing regardless of the position of piston within the cylinder to preclude seepage of ground water into the valve operator.

3,750,695
FIRE CONTROL APPARATUS
George A. Utesch, Jr., Chicago, Ill., assignor to General Fire Extinguisher Corporation, Northbrook, Ill.
Division of Ser. No. 847,172, Aug. 4, 1969. This application Feb. 1, 1971, Ser. No. 111,689
Int. Cl. B23b 41/08; F16e 41/04
U.S. Cl. 137—318 2 Claims



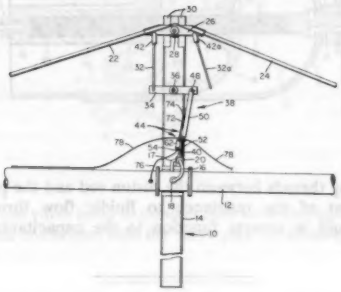
A fire control apparatus is provided particularly for use in areas where food is prepared using fats or greases. The apparatus automatically activates upon the presence of flame or excessive heat in a control zone whereupon high volume extinguishant is flooded rapidly over the zone to extinguish the flame and rapidly reduce the heat. After a predetermined time interval or after a predetermined volume of extinguishant has been discharged, the rate of flow of extinguishant from the same source will be automatically reduced a substantial amount and will continue to be discharged over the zone for a relatively long period of time to prevent new flames from developing and to further reduce the amount of heat in the zone to below the flame auto-ignition point.

3,750,696

MAYDAY SAFETY SHUTOFF SYSTEM RESPONSIVE TO ERRANT TOWERS OF AN AUTOMATIC IRRIGATION SYSTEM

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Continuation of Ser. No. 30,824, April 22, 1970, abandoned.
This application July 20, 1972, Ser. No. 273,524
Int. Cl. B05b 9/02; E01h 3/02
U.S. Cl. 137—344 13 Claims



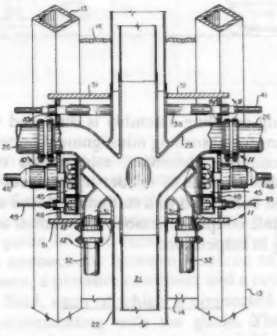
A safety control system for shutting down a self-propelled sprinkling apparatus when any of the towers, and thus the pipeline supported thereby, deviates from a substantially straight line relationship with the rest of the towers. Safety control means on each tower senses when the tower is leading or lagging the adjacent towers by more than a preselected distance, and in turn actuates means which terminates the flow of water to the pipeline and shuts down the entire sprinkling apparatus. Actuation is accomplished via the introduction of pressure, or by a drop in pre-established pressure.

3,750,697

STRUCTURAL BUILDING FRAME INCORPORATING UTILITIES

Ernest J. Kump, 360 Everett Ave., Palo Alto, Calif.

Filed May 13, 1971, Ser. No. 143,131
Int. Cl. E04h 12/00
U.S. Cl. 137—356 15 Claims



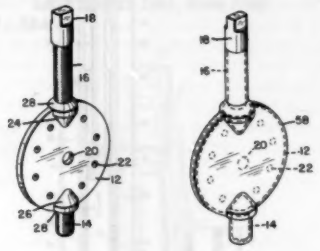
A structural building frame in which vertical columns incorporate utilities and provide access to the utilities at each level. The frame is formed of modular components including vertical column sections incorporating utilities. The column sections may also include integral outwardly extending beams for connection with beams of an adjacent column or to interconnecting cross modules. The assembled modular components provide a frame for supporting the floors and walls of a building structure or environmental space modules.

3,750,698

COATED VALVING MEMBER

David L. Walchle, and Peter J. Schmidt, both of Cincinnati, Ohio, assignors to Xerox Corporation, Cincinnati, Ohio

Division of Ser. No. 55,370, July 16, 1970, Pat. No. 3,670,071.
This application Mar. 23, 1972, Ser. No. 237,583
Int. Cl. F16k 1/22
U.S. Cl. 137—375 5 Claims



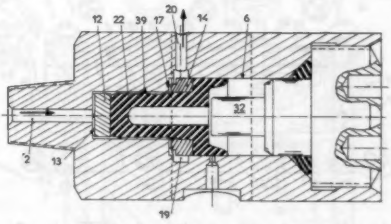
All areas of the butterfly type valving member which may be exposed to attach by corrosive substances, are coated with a protective material of the class of tetrafluoroethylene or equivalent substance, by a high-pressure and high-temperature molding process; the process involving withdrawing support from a journal end of the valving member during a critical phase of the molding procedure to ensure adequate coating of said journal end including the customary turning center hole thereof.

3,750,699

VALVES

Raymond Bore, Saint Etienne, France, assignor to Bennes Marrel, Saint-Etienne (Loire), France

Filed Oct. 12, 1971, Ser. No. 188,055
Claims priority, application France, Oct. 9, 1970, 7037344
Int. Cl. F16k 31/145
U.S. Cl. 137—494 7 Claims



A safety valve for use in the hydraulic system of hydraulic pit props in which the valve has a hollow body mounting inside a cut-off member which is resiliently urged to a sealing position between inlet and outlet pipes. The cut-off member is a deformable member having a blind bore therein. The deformable cut-off member extends through an anti-extrusion ring and passage means are provided between the body of the valve and the anti-extrusion ring.

3,750,700

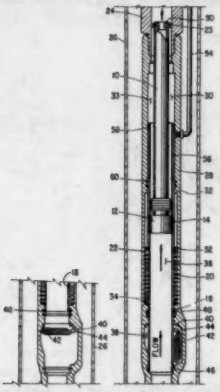
MEANS FOR FLOW CONTROLLING HYDRAULIC CHECK VALVE

John H. Ecuer, Lafayette, La., assignor to Amoco Production Company, Tulsa, Okla.

Filed Apr. 6, 1972, Ser. No. 241,680
Int. Cl. F16k 17/20
U.S. Cl. 137—498 4 Claims

This valve includes a special tubular section inserted within a tubing string. The lower end of the section has a main flow

control valve which closes upwardly by force of flowing fluid, but is held open by a sleeve mounted in the section which is slideable between an upper and lower position. Inside the sleeve is a wireline retrievable orifice. Hydraulic fluid pressure holds the sleeve in its lower position. The sleeve is urged upwardly by combination of a spring and the pressure drop across the orifice. When the sleeve is in its upper position, the flow valve closes. Means are provided such that the valve is responsive to flow rate as well as to changes in the applied hydraulic pressure.



3,750,701

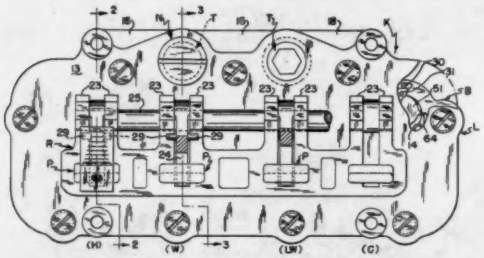
SELECTABLE TEMPERATURE MIXING VALVE

Irlin Botnick, 3155 Kersdale Rd., Pepper Pike, Ohio

Filed Aug. 31, 1971, Ser. No. 176,550

Int. Cl. F16k *19/00*

U.S. Cl. 137—606 **9 Claims**



A selectable temperature mixing valve delivering, from hot and cold water supplies, water at hot, cold and one or more intermediate temperatures in volume set by the degree of actuation of respective pushbutton actuated operators controlling displacement of valving members relative to inlet ports in corresponding valving sections, single ported for hot and cold delivery and double ported for mixed water in each section for intermediate temperature delivery; and in which initial intermediate temperature mixed flow is restricted at a point in the mixed flow path to ensure temperature stability with changing flow rate.

3,750,702

FLUIDIC RESISTANCE-CAPACITANCE DEVICE

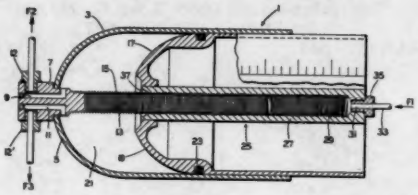
Guy S. Mahan, Rio Rancho Estates, N. Mex., assignor to International Basic Economy Corporation, Akron, Ohio

Filed Oct. 26, 1971, Ser. No. 192,363

Int. Cl. F17d *1/00*

U.S. Cl. 137—608 **6 Claims**

A device for interposing a variable resistance and variable capacitance function in a fluid flow line wherein the resistance and capacitance are reciprocal functions of one another. The device comprises a closed cylinder having a piston rod and an adjustable piston within the cylinder defining a capacitive cavity therein and including metering or valve means comprising mating threads between the piston rod and the piston for adjustment of the resistance to fluidic flow through the threads and in reverse function to the capacitance in the device.



3,750,703

SELF-SEALING COUPLING ASSEMBLY

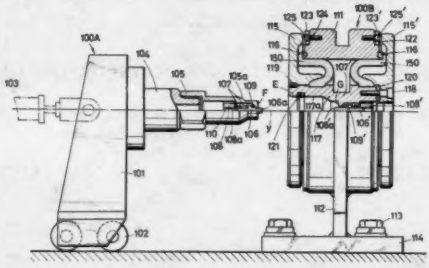
Teiji Arita, No. 1-21, Nishitobe-cho, Nishi-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Aug. 8, 1972, Ser. No. 278,754

Claims priority, application Japan, Aug. 9, 1971, 46/59599

Int. Cl. F16l *27/10, 37/00*

U.S. Cl. 137—614.04 **2 Claims**



A self-sealing coupling assembly is disclosed which incorporates a means for absorbing misalignment between the male and female coupling members, said means comprising a resilient member such as of rubber in the form of a bellows having one end connected to a stationary sleeve and the other end to the female coupling member in a manner to support the latter movably in suspension.

3,750,704

MULTI-WAY VALVE

George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.

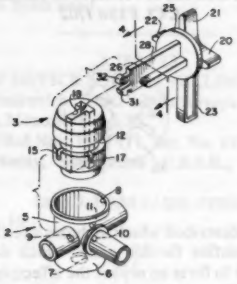
Filed Oct. 8, 1971, Ser. No. 187,699

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.47 **12 Claims**

A multi-way valve comprising, a cylindrical valve body made of plastic and having a plurality of ports in the side wall thereof, a cylindrical valve plug made of rubber and rotatably

fitted within said valve body, said valve plug having passage means therein adapted to be brought into registry with the



ports in the valve body to control flow therethrough, and handle means connected with the valve plug for rotating the valve plug.

3,750,705

HYDRAULIC CONTROL DEVICE

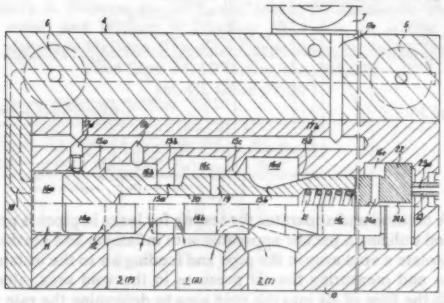
Armin Blumer, Schwanden, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG, Nafels, Switzerland

Filed Nov. 3, 1971, Ser. No. 195,198

Claims priority, application Switzerland, Nov. 19, 1970, 17195/70

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.64 **6 Claims**



The control device is designed to control a hydraulically operated piston unit, particularly the melting and injection screw unit of an injection molding machine for plastics. The control device includes a main control valve reciprocable in a cylindrical guide or bore formed in a valve body, and controlling the connections between a source of hydraulic fluid under pressure, a pressure consumer and a return flow collector for the fluid, each of which is connected to a respective passage communicating with the guide. The main control valve is subjected to axial pressures, variable in at least one stage, to control the connections between the passages. A reversing valve is mounted on the housing to form a unit therewith, and one or more anticipatory control-pressure valves are also mounted on the housing. The reversing valve is effective to reverse the position of the main control valve, while the anticipatory control-pressure valves act on the main control valve to determine the magnitude of the flow area between chambers, each connected to a respective passage in the housing.

3,750,706

VALVES FOR CONTROLLING THE SUPPLY OF DRINKING WATER TO POULTRY AND OTHER LIVESTOCK

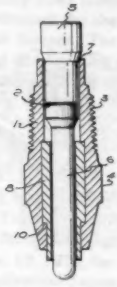
Ronald Ingham Mallinson, Marten, Rebroyd, Triangle, near Halifax, Yorkshire, England

Filed June 24, 1971, Ser. No. 156,395

Claims priority, application Great Britain, July 1, 1970, 31,820/70

Int. Cl. A01k *7/02*; F16k *1/00*

U.S. Cl. 137—614.18 **1 Claim**



A valve for controlling the supply of drinking water to poultry having a body of moulded plastic incorporating two valves, one upper and one lower, the lower seat comprising the upper end of a tube moulded in the body and the upper seat being formed by the plastic material of the valve body.

3,750,707

COMPONENT FOR PNEUMATIC LOGICAL CIRCUITS WITH TWO DISTINCT PERMISSION CONTROLS

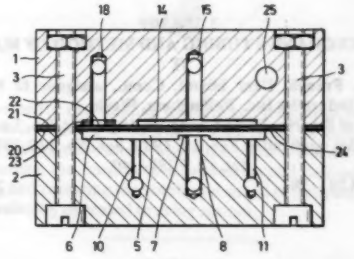
Innocente Dordoni, Strada Paullese Km. 3, Peschiera Borromeo, Italy

Filed Apr. 12, 1971, Ser. No. 133,037

Claims priority, application Italy, Nov. 25, 1970, 32174 A/70

Int. Cl. F16k *11/02*; F15c *3/04*

U.S. Cl. 137—625.48 **4 Claims**



A component for pneumatic logical circuits with two distinct permission controls, working with great reliability even with normal impure workshop compressed air, comprising a block with three inner chambers, wherein the chambers are separated by two elastically deformable membranes, in the first of said chambers being arranged a first passage capable of being alternately opened or closed by the said membranes, a couple of further passages entering said first chamber, all such passages being alternately connected to the feeding source, the discharge to the atmosphere, the use and the control, according to the desired logical Boolean function, and in which the other two adjacent and not communicating chambers (neither between themselves nor with the first one) serve to receive pneumatic signals in the form of input variables and acting on the said membranes, thus causing the closing and opening, respectively, of the said first passage entering the said first chamber.

3,750,708

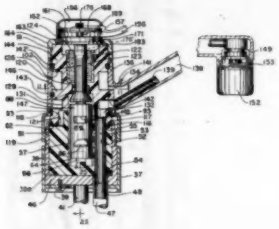
MIXING VALVE STRUCTURE

Aaron A. Staat, 82 Dudley Rd., Fort Mitchell, Ky., and Robert A. Staat, 3815 Narrows Rd., Erlanger, Ky.

Division of Ser. No. 797,737, Feb. 10, 1969, Pat. No. 3,647,697, which is a continuation-in-part of Ser. No. 614,098, Feb. 6, 1967, abandoned. This application Oct. 22, 1971, Ser. No. 191,735

Int. Cl. F16k *19/00*

U.S. Cl. 137—625.17 **12 Claims**



A valve including an outer casing having a pair of inlets, an outlet and a cup-shaped recess formed therein. A valve chamber cartridge is removably received in the recess, the cartridge including a body having a pair of end surfaces and a valve chamber formed in the body extending from one of the end surfaces. A pair of inlet passages are formed in the body each of which has one end communicating with the valve chamber and its other end communicating with an exterior surface of the cartridge body. Ports in the casing connect each of the inlet passages with one of the pair of inlets, and a slide valve member is received in the valve chamber for controlling communication between the pair of inlets and the outlet through the inlet passages.

3,750,709

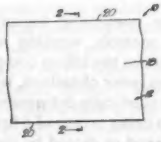
HEAT-EXCHANGE TUBING AND METHOD OF MAKING IT

Fred W. French, Deer Island, Conn., assignor to Noranda Metal Industries Inc., Bellingham, Wash.

Division of Ser. No. 38,132, May 18, 1970, Pat. No. 3,662,582. This application Feb. 29, 1972, Ser. No. 230,297

Int. Cl. F28f *1/40*

U.S. Cl. 138—38 **2 Claims**



Heat-exchange tubing with a peripheral wall of oblong cross-section, and inner fins on the wall of which the fins on either of two opposite flat wall sections extend with their tips at least to the level of the tips of the fins on the other flat wall section, and a method of forming the tubing from a round inner-fin tube blank, involving partially flattening the round blank into the tubing with its peripheral wall of oblong cross-section.

3,750,710

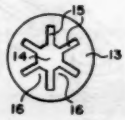
VARIABLE FLUID ORIFICE

Paul F. Hayner, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 12, 1971, Ser. No. 188,284

Int. Cl. F15d *1/02*

U.S. Cl. 138—40 **9 Claims**



A restrictor is described which includes a resilient plate with portions cut to define flexible vanes which deflect with increasing pressure to form an orifice the effective area of which increases with differential pressure in such a way that the differential pressure is a predetermined function of the rate of flow of fluid therethrough.

3,750,711

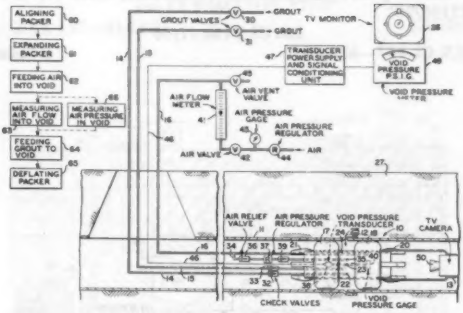
METHOD AND APPARATUS FOR TESTING FOR LEAKS IN PIPES

James T. Conklin, and James B. Rogers, both of Orlando, Fla., assignors to Penetryn Systems, Inc., Willoughby, Ohio

Filed Mar. 24, 1971, Ser. No. 127,712

Int. Cl. F16l *55/18*

U.S. Cl. 138—97 **11 Claims**



A method and apparatus for testing for leaks in pipes is provided utilizing a packer apparatus with inflatable end portions to isolate a void area in the pipe and feeding air to the isolated area and measuring the air pressure in the void area, along with the flow of air into the void area to determine the rate of leakage from the area.

3,750,712

HIGH PRESSURE HOSE

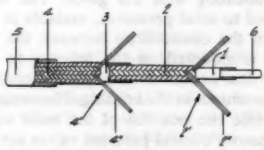
Karl Brand, 8603 Ebern, Friedlandstrasse 6, Germany

Filed Apr. 19, 1971, Ser. No. 135,136

Claims priority, application Germany, July 16, 1970, P 20 35 399.5

Int. Cl. F16l *11/16*

U.S. Cl. 138—124 **7 Claims**



A high pressure hose is disclosed having at least two braided layers with a smaller number of strands of threads in the inner

braided layer than in the outer braided layer. Thus in making the hose there are a smaller number of spools in the inner braiding head of the braiding apparatus than in the outer braiding head so that the inner head can rotate appreciably faster than the outer head.

3,750,713

BEATING UP DEVICE FOR TRAVELLING WAVE LOOMS

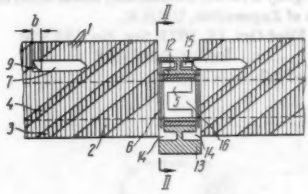
Dmitry Vladimirovich Titov, 13 Parkovaya, ulitsa 27, 2 korpus, kv. 49, Moscow, U.S.S.R.

Filed Nov. 11, 1971, Ser. No. 197,669

Claims priority, application U.S.S.R., Nov. 17, 1970, 1491756

Int. Cl. D03d *41/00, 49/60*

U.S. Cl. 139—12 **2 Claims**



The device comprises a reed in the form of disks mounted on a shaft. The shaft is located in bearings, in the housings of which on either side of the shaft and concentrically therewith there are provided slots accommodating a mechanism to move the weft carrier over the bearing, i.e., outside the shed.

3,750,714

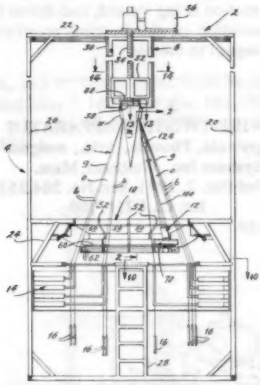
WEAVING MACHINE AND METHOD

Harry A. Holman, Jr., St. Louis; Albert W. Kallmeyer, Crestwood, and William W. Weaver, St. Louis, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sept. 27, 1971, Ser. No. 184,082

Int. Cl. D03d *37/00*

U.S. Cl. 139—16 **7 Claims**



A weaving machine for weaving a wrap thread into a multiplicity of longitudinal threads to create a tubular weave of substantial thickness includes means for supporting a mandrel about which the weave is formed and for further anchoring the longitudinal threads so that they extend downwardly along the mandrel in a shed-like configuration. Located below and centered with respect to the mandrel is a transporting mechanism including a plurality of radial slideways, each of which supports a series of individual sliders which confine the longitudinal threads and are capable of shifting independently of one another to change the radial positions of the various longitudinal threads. The transporting mechanism positions the threads in groups corresponding to the various slideways with the threads in each group being spaced radially from one another due to the radial disposition of the slideways. By manipulating the sliders, any two of the threads of a group can be spaced further apart than the remaining threads to provide a shed opening in the group. An endless track encircles the shed formed by the longitudinal threads, and this track has radial slots for receiving the various groups of longitudinal threads. A feed assembly rides around the track, and this assembly is sized to fit through the shed openings in the various groups of longitudinal threads. The feed assembly carries a bobbin of wrap thread and lays this wrap thread into the portion of the shed opening adjacent to the mandrel as the feed assembly moves along the track, thus forming the tubular weave.

3,750,715

LET-OFF MECHANISM OF LOOM

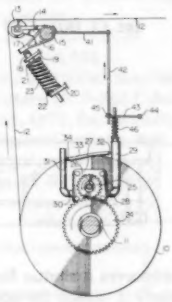
Yukio Mizuno, and Takeshi Oguro, both of Tokyo, Japan, assignors to Nissan Motor Company, Yokohama City, Japan

Filed Nov. 10, 1970, Ser. No. 88,266

Claims priority, application Japan, Nov. 12, 1969, 44/90037

Int. Cl. D03c *49/06*

U.S. Cl. 139—110 **6 Claims**



A device for maintaining uniform the tension of yarn being drawn to a weaving loom from a yarn beam by detecting the slackness or tension under which the yarns are at all times and for adjusting the tension to a predetermined desired level by braking and restoring the rotational speed of the yarn beam by a hydraulically operated braking system.

3,750,716

APPARATUS FOR SUPPLYING WEFT YARNS

Hiroshiro Kimura; Heiji Arimoto; Hirohisa Nara; Tsugio Miyamatsu, and Mitsuo Kitajima, all of Kyoto, Japan, assignors to Unitka Ltd., Amagasaki, Japan

Filed July 27, 1970, Ser. No. 58,627

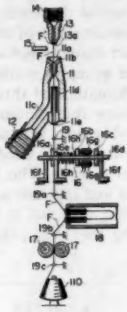
Claims priority, application Japan, July 26, 1969, 44/59272; Apr. 25, 1970, 45/35579; Apr. 27, 1970, 45/36162

Int. Cl. D03d *47/34*

U.S. Cl. 139—122 R **13 Claims**

A method of supplying weft yarns includes the steps of holding the free end of a predetermined length of yarn to be used for a weft yarn by suction and a portion of its length near the end along a fluid flow path and supplying the held yarn into the shed by means of a yarn carrier which grips the yarn end and traverses the shed. The apparatus for accomplishing the method includes a reserve pipe into which a predetermined length of yarn is placed from a supply and held for insertion into the shed and a fluid ejector to feed the free end of the

yarn to a suction holding device across the path of the weft yarn carrier. The carrier is provided with a gripper for holding



the free end of the weft yarn as the carrier is flown across the shed with the ejector assisting in the weft yarn feed.

3,750,717

SHUTTLE WITH IMPROVED MEANS FOR SECURING BOBBIN-RETAINING CLAMP

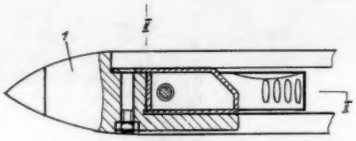
Jurg Forster, CH-8340 Hinwil, Schweiz, Alpenblickstrasse, Switzerland

Filed Sept. 15, 1970, Ser. No. 72,344

Claims priority, application Germany, Sept. 16, 1970, P 19 46 884.9

Int. Cl. D03j *5/08*

U.S. Cl. 139—207 **8 Claims**



The disclosure concerns a shuttle for an automatic loom, and more particularly a means for securing the head of a spring clamp for the pirn or cop in an automatic shuttle and of the type in which a bolt passes transversely through a bore in the nose of the shuttle and the head of the clamp.

3,750,718

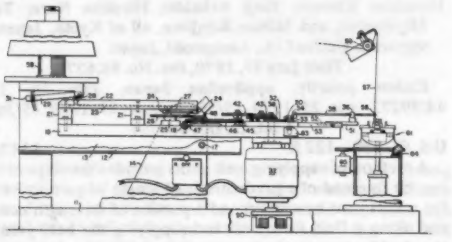
METHOD AND APPARATUS FOR WINDING AND INSERTING STATOR COILS

Richard D. Sedgewick, 100 Horne St., Dover, N.H.

Filed Feb. 8, 1971, Ser. No. 113,258

Int. Cl. B21f *3/04*

U.S. Cl. 140—92.1 **12 Claims**



A completed set of stator coils is wound with the respective coils arrayed in horizontal sectors supported on a coil form which determines the length of the turns in each coil and corresponds to the length required by the geometry of the stator. The coils are distributed vertically to make the general dimensions of the copper cross section suitable for passage through the slot between the teeth on the stator. After the set of coils is wound, the stator is registered with the coils on the coil form such that a central plunger moving through the coil form simultaneously moves all the windings of the set through the central bore of the stator while simultaneously drawing the coil sides through the stator slots thus ultimately to position the set of coils in the proper location distributed on the poles of the stator.

3,750,719

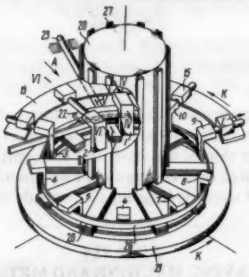
DEVICE FOR WINDING CONTINUOUS WINDING WITH INTERLAY SECTIONS

Leonid Semenovich Goldman, Kremlewskaya ulitsa 57a, kv. 37, and Evgeny Lvovich Shteinfaier, ulitsa Scherbakova, 30, kv. 6, both of Zaporozhie, U.S.S.R.

Filed Oct. 15, 1971, Ser. No. 189,590

Int. Cl. B21f *3/08*

U.S. Cl. 140—92.2 **7 Claims**



A device for winding continuous windings with interlay sections mainly for transformers and the like. The device is characterized in that it is provided with a rotatably mounted base adapted to accommodate thereon a circumferential arrangement of bearing members used as a mandrel for laying the wire of the section being wound, and drives for effecting a step-like reciprocation of the bearing members in a radial direction with respect to the base.

3,750,720

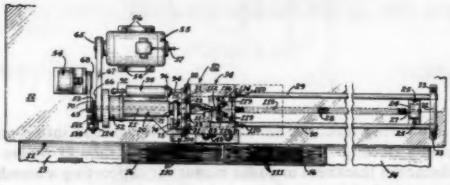
WIRE-TWISTING APPARATUS

Conrad J. Steigerwald, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 2, 1971, Ser. No. 204,253

Int. Cl. B21f *7/00*

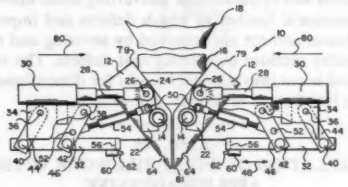
U.S. Cl. 140—149 **10 Claims**



Wire-twisting apparatus adapted for twisting a plurality of individual strands of wire into a single cable comprising a twisting head mounted for rotary movement utilizing actuating means for providing twists in the wire at a given number

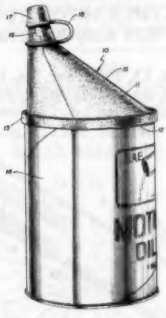
per inch and of a predetermined tightness, the number of twists per inch being controlled by a lead screw and the number of twists per desired length being controlled by a counter.

3,750,721
EXPANDING FILL SPOUT FOR BAG FILLING MACHINE
Doyle R. Hudson, West Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.
Filed Aug. 18, 1971, Ser. No. 172,688
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—10 **8 Claims**



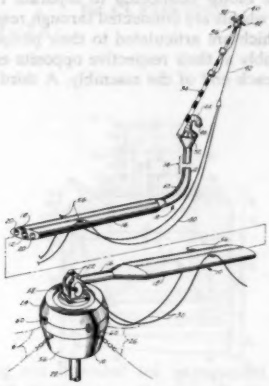
An improved filling machine of the type having an expanding fill spout comprising at least two split sleeves pivotally mounted around a circular filling spout. The improved filling machine also contains new and novel automatic means for holding the bag on the fill spout and means for detecting the presence or absence of a bag on the fill spout. The split sleeves and the means for holding the bag on the fill spout are interconnected by means of levers and other mechanical connections for unit operation by at least one power cylinder or other power means.

3,750,722
FUNNEL
Roger L. Nowak, 262 W. Boylston St., West Boylston, Mass.
Filed May 7, 1971, Ser. No. 141,135
Int. Cl. B65b *39/06*
U.S. Cl. 141—332 **1 Claim**



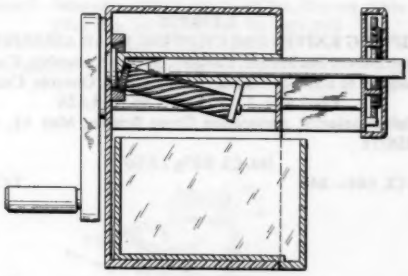
A funnel having a flange adapted to fit around the periphery of a can and having its small end offset from the large end to assist in pouring.

3,750,723
SINGLE POINT MOORING SYSTEM
Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.
Filed Jan. 4, 1971, Ser. No. 103,700
Int. Cl. B65b *3/04*
U.S. Cl. 141—388 **21 Claims**



A floating, rigid, tubular boom, pivotally connected to a submerged piling or buoy, provides self-contained mooring and fluid transport facilities for offshore servicing of cargo vessels in a downstream position.

3,750,724
PENCIL SHARPENING MACHINE
Gerald W. Dahle, Marienberg 19, D-863 Coburg, Germany
Filed Mar. 31, 1971, Ser. No. 129,862
Claims priority, application Germany, Apr. 2, 1970, P 20 15 683.6
Int. Cl. B43l *23/00*
U.S. Cl. 144—28.1 **8 Claims**

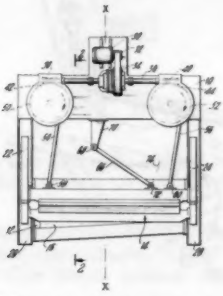


A pencil sharpening machine having a chuck for gripping the pencil or lead holder on the outside of the machine housing and movable in its axial direction against spring action away from the housing, and an actuating member which is mounted at least partly within the housing and which, when an outer end is depressed with one finger, is adapted to open the chuck and also to shift the same in the axial direction.

3,750,725
VENEER SLICER MACHINE
Angelo Cremona, Viale Lombardia 275, 20052 Monza, Italy
Continuation-in-part of Ser. No. 106,646, Jan. 15, 1971, abandoned. This application Nov. 24, 1971, Ser. No. 201,846
Int. Cl. B27c *1/00*
U.S. Cl. 144—178 **5 Claims**

A veneer slicing machine or wood shearing machine includes a supporting table for receiving the wood stock to be

cut which is indexed upwardly at a predetermined rate in dependence upon the wood sheets or veneer which is to be formed. The block is cut by a movable knife blade assembly which is mounted at each end on slide members which move backwardly and forwardly on defined trackways on each side of a machine frame. A smaller stroke and less stress operation of the machine is obtained by driving the knife assembly through a drive motor connected to separate rotatable fly wheels. The fly wheels are connected through respective connecting rods which are articulated to their periphery and to the blade assembly at their respective opposite ends at locations adjacent each end of the assembly. A third connecting



rod is pivoted at its one end to the frame of the machine and pivoted at its opposite end to the blade assembly adjacent one of the pivot rod connections. It's end which is connected to the blade assembly moves through an arc, and the combined motion is such that the blade approaches the wood stock when it is angled transversely by an angle of 5° and this angle will vary, until it reaches the end of the shearing operation, to a value of about 20°. In an alternate arrangement the table, or bed carrying the wood stock, is connected to the fly wheels for movement backwardly and forwardly along with the shearing knife to provide a divided stroke system which will have smaller dynamic stresses than the fixed system.

3,750,726

CHIPPING KNIVES FOR CHIPPING HEAD ASSEMBLIES

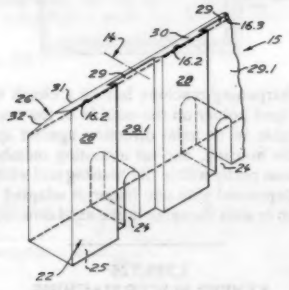
Ernest Robert Buchacher, Langley, British Columbia, Canada, assignor to Hawker Siddeley Canada Ltd., Ontario, Canada

Filed Aug. 3, 1971, Ser. No. 168,626

Claims priority, application Great Britain, May 11, 1971, 14,355/71

Int. Cl. B27g *13/00*

U.S. Cl. 144—240 **7 Claims**



A chipping knife mountable on a head rotatable about an axis at right angles to a longitudinal axis of a log to be chipped, the knife having flat bottomed grooves formed in an advance face which open into a bevelled surface so as to provide advance and trailing cutting edges, so as to reduce production of cards.

3,750,727

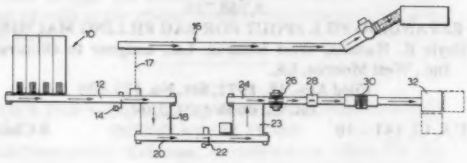
SMALL WOOD SAWMILL

Lewis R. Ord, Port Loring, Ontario, Canada

Filed Sept. 7, 1971, Ser. No. 178,090

Int. Cl. B27b *1/00*

U.S. Cl. 144—312 **1 Claim**



A method and apparatus for converting small-diameter logs into dimensional lumber in which defects and imperfections such as knots and rot are removed by severing and removing full-diameter sections containing said defects. The remaining clear wood is cut into suitable lengths for dimensional lumber and sawn into boards of desired proportions.

3,750,728

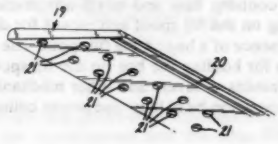
INSTALLATION OF WOOD MILLWORK WITH PRE-APPLIED ADHESIVE

Joseph L. Stark, Minneapolis, Minn., assignor to Chippewa Lumber Industries, Inc., Glidden, Wis.

Filed May 28, 1971, Ser. No. 148,013

Int. Cl. B27d *1/00*

U.S. Cl. 144—315 **4 Claims**



Wood millwork (e.g., wood trim molding for use around door openings) is installed by means of pre-applied adhesive (e.g., pressure sensitive adhesive strips) which is bonded to the generally planar underside of the moulding and activated at the time of use (e.g., activated by removing protective films or with solvents). Preferably, the adhesive is bonded to the millwork at the time of manufacture. Such millwork can be installed on site with the use of substantially fewer nails than now used commercially.

3,750,729

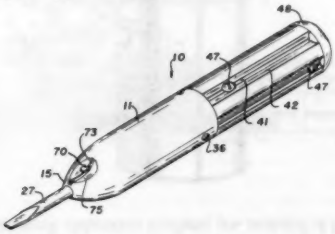
MULTIPLE DRIVER TOOL

Roland G. Lemieux, 7655 Kelly Rd., Prince George, British Columbia, Canada

Filed Sept. 13, 1971, Ser. No. 179,840

Int. Cl. B25g *1/08*; B43k *27/14*

U.S. Cl. 145—64 **5 Claims**



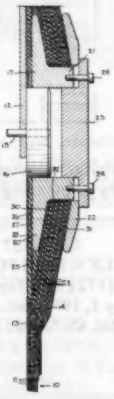
A multiple driver tool having a chamber for holding a plurality of drivers for screws and the like, and a guided slide con-

nected to each driver by means of which the driver can be selectively moved to a passage extending away from an end of the chamber. Guide means in the chamber directs each driver towards and into the passage during movement of that driver, each driver being long enough when in the passage to project beyond the end of the multiple tool.

3,750,730
REINFORCING ELEMENT AND FITTING FOR A FLEXIBLE WALLED CONTAINER

Robert E. Dorsch, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.

Filed Sept. 10, 1971, Ser. No. 179,290
Int. Cl. F16l *5/00*
U.S. Cl. 150—8 **17 Claims**



Fittings of markedly superior crashworthiness for flexible walled liquid containers, particularly fuel tanks for aircraft such as airplanes and helicopters, are made by reinforcing the container wall around such fittings with a plurality of substantially concentric annular turns, such as rings or other shapes utilizing parallel peripheral cords, of substantially inextensible reinforcing material, such as metal wire or textile cords, especially glass fiber cord, of the type commonly used for reinforcing rubber articles.

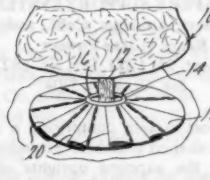
For use in so reinforcing the container, wall reinforcing doilies are provided which comprise an annular sheet of curable but uncured polymeric material embodying (as by attachment to one face of said sheet or by embedment in said sheet or between two such sheets) substantially inextensible reinforcing material disposed as concentric annular turns, such as rings or other shapes utilizing parallel peripheral cords, in a plane generally parallel to the plane of the sheet.

Preferably the reinforcing material is wound spirally about the aperture with the adjacent spiral turns in actual physical contact over at least 80 percent of the spiral length.

3,750,731
CHRISTMAS TREE PACKAGING MEANS

Ronald Harry Brimmell, 2776 Charter Blvd., Troy, Mich.

Filed Aug. 2, 1971, Ser. No. 167,894
Int. Cl. B65d *81/00*
U.S. Cl. 150—52 R **6 Claims**

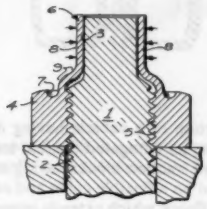


A specially constructed Christmas tree package or bagging means for enclosing the tree after usage thereof.

3,750,732
LOCKING NUT

Kurt O. Moebius, P.O. Box 2339, Palos Verdes, Calif.

Continuation-in-part of Ser. Nos. 793,009, Jan. 22, 1969, abandoned, and Ser. No. 14,773, Feb. 26, 1970, abandoned, said Ser. No. 14,773, is a continuation of Ser. No. 771,780, Oct. 30, 1968, abandoned. This application Jan. 29, 1971, Ser. No. 111,002
Int. Cl. F16b *39/02*
U.S. Cl. 151—2 A **9 Claims**

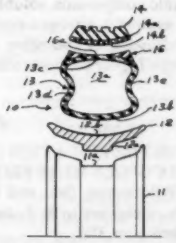


A locking nut intended for engagement with a screw-threaded bolt shank having diametrically disposed flat sides, the nut being provided with a malleable cylindrical extension clearing the screwthreads of the bolt; the extension being capable of being squeezed inwardly from opposite sides into conformity with the flat sides of the bolt, and in doing so, causing the formation of an essentially S-shaped transition zone. A modification includes a transition of reduced thickness. A further modification includes a weakened portion in the transition zone for later severance to permit removal of the nut from the bolt.

3,750,733
QUICK CHANGE-REPLACEABLE TREAD PNEUMATIC TIRE

Howell K. Brewer, 1921 N. Longview St., Dayton, Ohio, and Alvars V. Petersons, 1925 Little York Rd., Dayton, Ohio

Filed Dec. 14, 1971, Ser. No. 207,850
Int. Cl. B60c *7/24*
U.S. Cl. 152—175 **3 Claims**

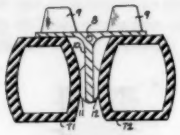


A vehicular wheel and pneumatic tire assembly including a wheel portion, a tire-carcass portion and a separate tread band portion installed over the uninflated carcass-periphery, and in which the carcass portion is molded into a convoluted shape, when uninflated, that provides its easy stretching over the outside diameter of the wheel and, on application of an inflation pressure, simultaneously ensures both the outward expansion of the carcass-periphery and the inward contraction of the carcass-inside diameter for respective tight-fitting engagement with, and assembly to, the tread band and wheel portions.

3,750,734
VEHICLE TRACTION DEVICE AND METHOD OF MOUNTING

Jimmy C. McCord, Rt. 4, Box 20, Roanoke, Ala.

Filed Mar. 17, 1972, Ser. No. 235,668
Int. Cl. B60c 27/22
U.S. Cl. 152—220 2 Claims



To improve traction of a vehicle having dual type wheels and pneumatic tires, an elongated flexible traction device including a plurality of traction blocks having tread surfaces are threadedly mounted on a flexible cable and each block is provided with a radial flange which extends inwardly between the tires of the dual wheel. Flexible coupling means is secured to one end of the traction means and is inserted between the tires and through an aperture in one part of the wheel and is then secured to the wheel. The vehicle is first driven over the flexible traction device after having been coupled at one end to the wheel. After the other end of the traction device reaches a position atop the wheel, a flexible anchoring chain is inserted between the tires and outwardly through an aperture in one of the wheel parts and is then anchored by over-center adjustable toggle means which itself is secured at one end in an aperture formed in the wheel part and at the other end to a selected length of the anchoring chain.

3,750,735
REMOVAL OF WATER FROM LIQUID MIXTURES CONTAINING FORMALDEHYDE USING A POROUS POLYMERIC MEMBRANE

Robert Chiang, and Eli Perry, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 46,800, June 16, 1970, abandoned. This application Jan. 19, 1972, Ser. No. 219,155
Int. Cl. B01d 1/22, 3/00, 13/00; C08f 15/12
U.S. Cl. 159—49 6 Claims

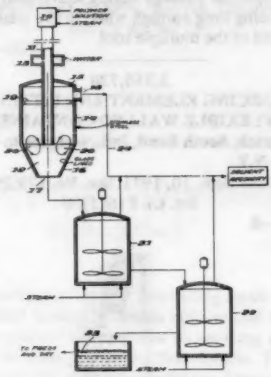
Process for the separation of water from mixtures of water and organic or inorganic compounds, soluble in water, by contacting the mixtures against a nitrogen-containing polymeric membrane, and withdrawing at the other side of the membrane a mixture having a higher concentration of water.

3,750,736
APPARATUS FOR THE ISOLATION OF α-OLEFIN HYDROCARBON COPOLYMERS FROM SOLUTION

Richard S. W. Batt, Wilmington, Del., and Louis A. De Frate, Kennett Square, Pa., assignors to E. J. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 782,821, Dec. 11, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,117
Int. Cl. B01d 1/14, 3/34, 3/38
U.S. Cl. 159—16 S 6 Claims

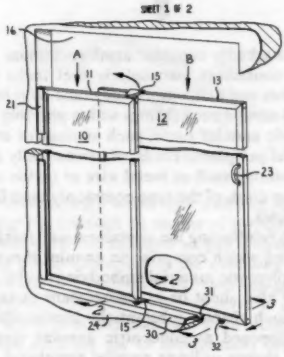
Apparatus and process for the steam isolation of elastomeric α-olefin polymers from organic solvent solution by atomizing the solution with steam in an atomizing nozzle; passing the effluent from the nozzle through a stripping tube operated in the spray-flow regime and having inner walls essentially parallel throughout the length of the tube, and from the stripping tube into a flash chamber; whereby solvent-swollen polymer crumb can be collected and removed from the flash chamber. Means are disclosed whereby agglomeration of polymer on the inner walls of the stripping tube and flash chamber is prevented, and whereby entrainment of polymer crumb and undue pressurization by jet pumping are avoided.



3,750,737
ADJUSTABLE WIDTH FOLDING DOOR

Roger V. Woodward, 11721 S.E. Taylor St., Portland, Oreg.

Filed May 1, 1972, Ser. No. 248,926
Int. Cl. E05d 15/26
U.S. Cl. 160—206 6 Claims



This is a two-panel folding door having one panel hinged to a door jamb and a second panel pivotally connected to the swinging side of the first panel. Special pivot brackets on the upper and lower ends of the second panel have adjustable clamp means to vary the overlap of the two panels according to the width of the doorway opening. Different width adjustments may be made in the top and bottom pivot brackets to fit an opening which is wider at the top or bottom.

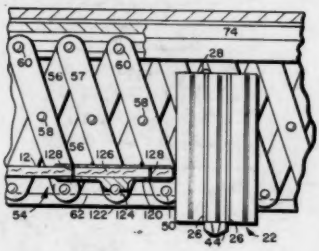
3,750,738
DRAPERY SUPPORT SYSTEM

Samuel Doston Powers, Anaheim, Calif., assignor to La Verne Jane Powers and Bruce Wayne Powers

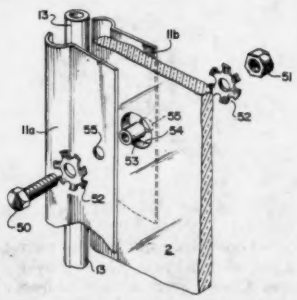
Filed Sept. 21, 1971, Ser. No. 182,444
Int. Cl. A47h 5/04
U.S. Cl. 160—342 6 Claims

A drapery support system comprising a substantially enclosed rod with U-shaped members extending from the bottom thereof with the exposed uprights of said members providing support for a drapery pleater, having a plurality of slots therein for the placement of a drape to be pleated and

supported. The U-shaped members are supported and controlled by lazy tongs having guide elements in the form of projecting pins and an overriding channel member for control thereof so that said lazy tongs can be driven by pull cords moving within said rod in a uniform manner to provide even spacing of the pleaters and the drapes attendantly connected therewith. A further embodiment incorporates lazy tongs hhaving pin shaped extensions which fit into disc shaped guides having eyelets depending therefrom.



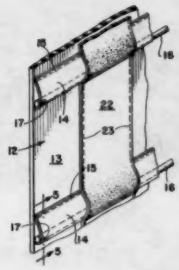
3,750,739
FLEXIBLE TRAFFIC DOOR
Winston B. McGuire, Plattsburgh, N.Y., assignor to W. B. McGuire Co., Inc., Plattsburgh, N.Y.
Filed Feb. 7, 1972, Ser. No. 224,077
Int. Cl. E06b *3/80*
U.S. Cl. 160—354 **3 Claims**



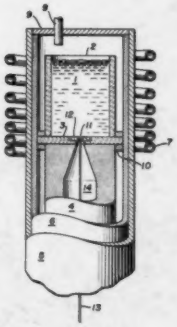
A flexible traffic door comprising a rigid frame by which said door is hingedly mounted in a door frame and a sheet of flexible material mounted in said frame and forming a panel of said door, said sheet being attached to said frame by a connecting means which allows a relative movement between said sheet and said frame.

3,750,740
FLEXIBLE CLOSURE FOR LOG STEAMING VAT
Vernon E. Newman, Yakima, Wash., assignor to Yakima Tent and Awning, Co., Ltd., Yokima, Wash.
Filed Nov. 2, 1971, Ser. No. 194,889
Int. Cl. A47h *23/00*
U.S. Cl. 160—354 **1 Claim**

A free-hanging flexible closure for the discharge end of a log steaming vat retains steam in the vat while permitting logs to roll from the vat without damage to the closure. The closure is constructed to resist the corrosive effects of steam, petroleum and acids and is also highly resistant to scuffing and chafing caused by contact with the rolling logs. It is weighted so that it will normally and automatically assume a vat-sealing position.



3,750,741
METHOD FOR IMPROVED EXTRUSION OF ESSENTIALLY INVISCID JETS
Lawrence F. Rakestraw, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 845,336, July 28, 1969, Pat. No. 3,584,678. This application Jan. 11, 1971, Ser. No. 105,719
Int. Cl. B22d *11/00*; B22c *1/00*
U.S. Cl. 164—82 **4 Claims**

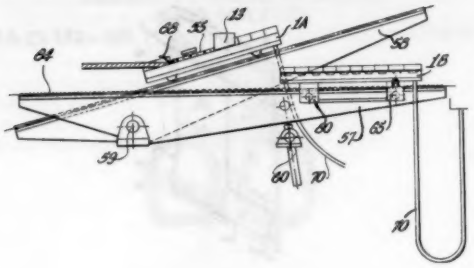


High density, high purity polycrystalline and single crystal beryllium oxide orifice plates have been successfully employed in wire manufacturing processes which comprise spinning molten metals through fine diameter orifices as molten metallic jets.

3,750,742
CONTINUOUS STEEL CASTING APPARATUS
Ugo Brusa, Via Borgnis, Domodossola, Italy
Continuation-in-part of Ser. No. 796,120, Feb. 3, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 214,828
Claims priority, application Italy, Feb. 6, 1968, 50417 A/68; July 30, 1968, 52642 A/68
Int. Cl. B22d *11/06*
U.S. Cl. 164—276 **4 Claims**

In a method of casting of steel by pouring it in the molten state from an oblique spout onto a parallel, oblique mold which has two sections, individually moving along a path which, after separating from the path of the solidified billet, return to the original point, an apparatus is provided which includes a cooled ingot mold longitudinally divided into two sec-

tions, a container to feed molten steel from a lower curved spout and means for moving forward a first section of the mold



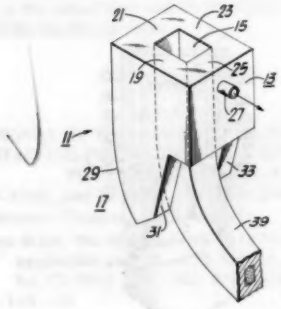
on a preestablished path to lower it and to carry it back again behind a second section of the mold and in alignment therewith.

3,750,743

CONTINUOUS CASTING MOLD

Sherman H. Barber, Pittsburgh, Pa., assignor to Koppers Company, Pittsburgh, Pa.

Filed Apr. 5, 1971, Ser. No. 131,134
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 **8 Claims**



A vertical mold for receiving molten metal and forming therein a continuous billet or slab has a lower portion comprised of a single curved wall and three conjunctive planar walls; whereby the billet or slab is drawn continuously from an upper rectangular portion of the mold wherein it is formed and is curved by the lower portion of the mold toward the horizontal.

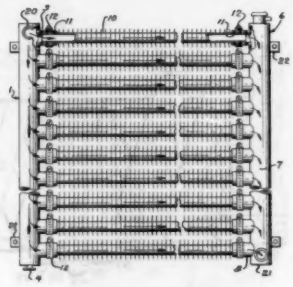
3,750,744

COOLING RADIATOR

Sam Bouras, 13057 S. Carondolet, Chicago, Ill.

Filed May 30, 1972, Ser. No. 257,935
Int. Cl. F28f *9/12*
U.S. Cl. 165—76 **3 Claims**

An improved radiator for use in the cooling system of a vehicle including a plurality of cooling conduits interconnecting an inlet manifold and an outlet manifold. The tubes are horizontally disposed creating efficient cooling of the fluid passing through the radiator by inducing uniform cross flow between the manifolds and the tubes. The manifolds may be



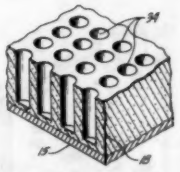
constructed of a suitable durable and flexible material such as rubber and are advantageously molded in a one-piece construction.

3,750,745

HIGH HEAT FLUX HEAT PIPE

Robert David Moore, Jr., 817 West Camino Real, Arcadia, Calif.

Division of Ser. No. 52,249, July 6, 1970, Pat. No. 3,666,005.
This application Apr. 21, 1971, Ser. No. 135,895
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **38 Claims**



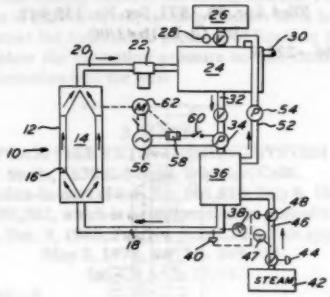
An improved heat pipe capable of conveying a greater heat flux than a conventional heat pipe is provided in practice of this invention. A heat pipe transfers heat from a heat source to a heat sink in the form of latent heat of vaporization of a fluid within the heat pipe. Hot vapor transfers heat from the heat source to the heat sink. Condensed liquid is returned from heat sink to the heat source through porous capillary material due to surface tension forces. The heat flux obtainable is limited by the available flow of returning liquid. In the improved heat pipe, the flow paths for liquid and vapor are serially segmented by impermeable barriers transverse to the direction of heat flow so that the distance of liquid flow in each segment is minimized. In zero gravity the heat flux obtainable is approximately proportional to the number of serial segments N into which the heat pipe is divided, that is, if the heat is transferred serially through N segments approximately N times the heat flux is possible as compared with a conventional heat pipe of the same overall dimensions. When operating against a gravity head, the maximum heat flux is about N^2 times the heat flux of a conventional heat pipe. Thus a heat pipe segmented into 10 serial segments has approximately 10 to 100 times the maximum heat flux capacity of an unsegmented heat pipe of the same cross section and total length.

3,750,746

METHOD OF HEATING ADHESIVE APPLICATOR ROLL

Charles R. Norman, Willingboro, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Division of Ser. No. 38,950, May 20, 1970, Pat. No. 3,706,278.
This application Apr. 24, 1972, Ser. No. 247,075
Int. Cl. B31f 5/04; B05c 1/08
U.S. Cl. 117—111 R 7 Claims



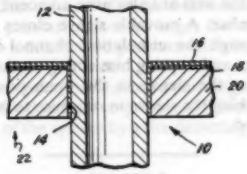
The adhesive roll of a single facer machine and/or the adhesive rolls of a glue machine at a double facer are heated to a surface temperature of between 130°F and 150°F by circulating water to heat the starch adhesive to a temperature just below its gelatinization temperature so long as the rolls are rotating.

3,750,747

HEAT EXCHANGER ASSEMBLY

Ashok Hingorany, Pawtucket, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1968, Ser. No. 787,718
Int. Cl. F28b 9/04
U.S. Cl. 165—178 7 Claims



A heat-exchanger end plate assembly is shown to comprise a metal plate member embodying a heat-conductive layer and a surface layer of solder, the plate having a plurality of apertures in which metal tubes are disposed. The solder layer is adhered to the tubes completely around the tube peripheries for sealing the apertures around the tubes. Where the heat-conductive layer material is formed of a material which is incompatible with the solder material at the melting temperature of the solder material, as where the heat-conductive layer is formed of copper and the solder has a copper constituent, an intermediate metal layer of steel or the like is metallurgically bonded to the heat-conductive layer and is adhered to the solder layer. A method for making the heat exchanger assembly is also shown.

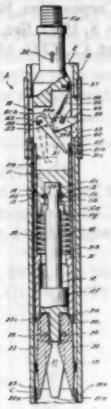
3,750,748

LINER SEPARATION APPARATUS

John C. Kinley, 5815 Royalton; Charles W. Agee, both of Houston, Tex., and Charles N. Fowler, New Orleans, La., assignors to said Kinley, by said Agee and Fowler

Filed Dec. 27, 1971, Ser. No. 212,222
Int. Cl. E21b 29/00
U.S. Cl. 166—55 14 Claims

Apparatus for separating an upper portion of a metallic liner from the inside wall of oil well production tubing to prepare said liner for removal therefrom. The apparatus includes a plurality of fingers which are pivotally mounted on a central body and are movable outwardly to an expanded position by an actuating sleeve. In the expanded position, the fingers are inserted between the liner and the tubing whereby the upper portion of the liner is separated from the tubing.

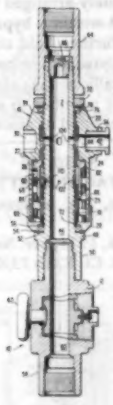


3,750,749

SWIVEL CONTROL HEAD AND METHOD OF CONTROL

Richard Lee Giroux, Duncan, Okla., assignor to Halliburton Services, Duncan, Okla.

Filed Apr. 19, 1971, Ser. No. 135,219
Int. Cl. E21b 33/00; F16l 5/00; 285 190
U.S. Cl. 166—95 17 Claims



A method and apparatus for providing flow control at a wellhead, characterized by the integration of a remotely operated control valve with a swivel assembly.

The mode of operation and structure of the control valve are such as to enable the valve to be opened in response to the imposition of a biasing force and enable a valve to be maintained open in response to the imposition of a relatively lower biasing force.

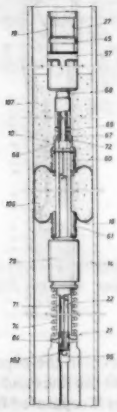
The valve may be opened and closed in response to the operation of a remote control mechanism or alternately may be opened and/or closed in response to the application of pump pressure to a conduit communicating with an interior passage of the swivel assembly.

3,750,750

APPARATUS FOR PLUGGING WELL BORES WITH HARDENABLE FLUENT SUBSTANCES

Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,154
Int. Cl. E21b *33/127*
U.S. Cl. 166—187 **22 Claims**



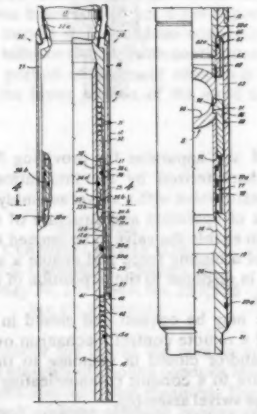
As a preferred embodiment of the apparatus of the present invention disclosed herein, a tubular bag mounted around an elongated tool body is operatively arranged to be expanded into engagement with a well bore wall by filling the bag with a hardenable fluent substance initially contained in a selectively-operable displacement assembly releasably coupled to the body. Biasing means are operatively arranged for imposing opposed axial forces against the ends of the expanded bag to securely anchor the tool until the fluent substance has solidified. Once sufficient time has elapsed for the fluent substance to solidify, a uniquely-arranged valve member is moved into seating engagement within a bypass passage provided in the body for blocking further fluid communication between the well bore intervals above and below the tool. One or more pressure-responsive metallic sealing elements are cooperatively arranged on the valve member to effect a permanent seal between the valve member and its associated valve seat.

3,750,751

SUBSURFACE SAFETY VALVE

James D. Mott, Houston, Tex., assignor to Hydrill Company, Los Angeles, Calif.

Filed Apr. 6, 1971, Ser. No. 131,710
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 S **35 Claims**



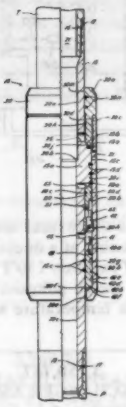
A pressure operated safety valve adapted to be mounted in a well tubing, which may be moved to open or closed positions independently of pressure in the tubing and locked in and unlocked from the open position using control fluid pressure.

3,750,752

COMPLETION AND KILL VALVE

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Apr. 30, 1971, Ser. No. 138,947
Int. Cl. E21b *43/00*
U.S. Cl. 166—224 R **25 Claims**



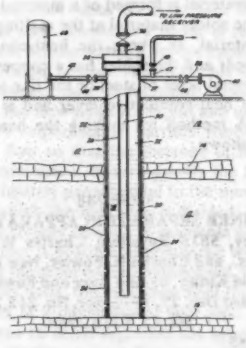
A completion and kill valve adapted to be placed immediately above a packer in the well production tubing including a tubular member having an inner bore and a circulation channel therein permitting communication between the inner bore and the well annulus area adjacent the exterior of the tubular member. A movable sleeve closes or opens communication through the circulation channel in response to various pressures and a spring bias acting on the sleeve. Provisions for locking the sleeve in the open position and subsequently unlocking the sleeve in response to inner bore pressure are provided.

3,750,753

METHOD OF PLACING A WELL ON PRODUCTION

George G. Bernard, La Mirada, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 3, 1972, Ser. No. 249,820
Int. Cl. E21b *43/00*
U.S. Cl. 166—309 **10 Claims**



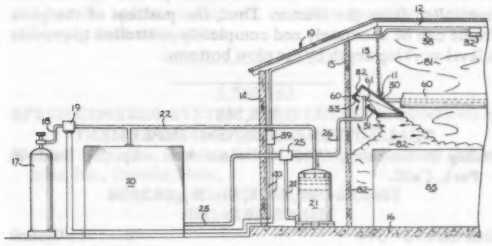
A method for removing liquid from a natural-flow well so as to reduce the hydrostatic pressure in the well below the forma-

tion pressure so that formation fluids will flow from the formation into the well and through the well to the surface. At least one slug of compressed gas is injected into the well annulus thereby displacing some of the liquid in the annulus into the tubing and forcing liquid in the tubing upward and out of the tubing. A volume of foaming agent solution is then injected into the annulus, displacing more liquid from the annulus into the tubing and forcing liquid in the tubing upward. Pressure on the annulus is then released, causing foam to form in the well. In this manner the hydrostatic pressure of liquid in the well is reduced below the formation pressure so that fluid can flow from the formation into the well.

3,750,754
FOAM FIRE EXTINGUISHING SYSTEM

Howard C. Stults, 7630 S. Bright, Whittier, Calif.

Continuation-in-part of Ser. No. 160,810, July 8, 1971, Pat. No. 3,709,302, which is a continuation-in-part of Ser. No. 782,343, Dec. 9, 1968, Pat. No. 3,592,269. This application May 2, 1972, Ser. No. 249,724
Int. Cl. A62c *35/46*
U.S. Cl. 169—9 **16 Claims**

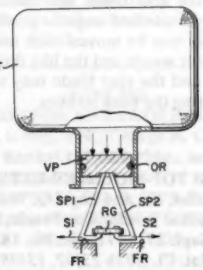


A high expansion foam fire extinguishing system to be coupled to independent sources of water and foam concentrate. A single, common pressurized source urges the water and foam concentrate into a non-vented pressure reducing valve to proportion the mixture of water and foam concentrate for delivery to a foam generator having a plurality of nozzle members and a stratified screen to produce high expansion foam upon activation of the system by a fire detecting sensor.

3,750,755
FIRE PROTECTION SYSTEM

Jack M. Kramer, Los Angeles; Abdul N. Ditabkhan, El Monte, and Carlo Pavone, Los Angeles, all of Calif., assignors to HTL Industries, Inc., Monrovia, Calif.

Filed July 27, 1971, Ser. No. 166,529
Int. Cl. A62c *35/12*
U.S. Cl. 169—26 **17 Claims**

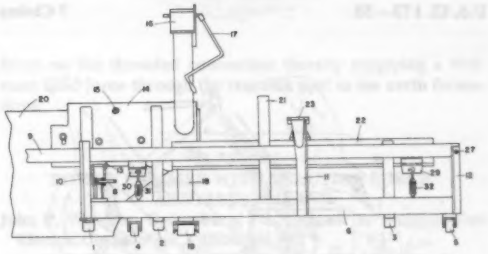


Covers mechanism for releasing the pressurized fluid contents of a container, the mechanism employing a collapsible split bushing and a removable ring or other retainer for holding the members of the bushing together. The container is closed by means of a plug which is supported by the split bushing and held in place to seal the plug to the container. A solenoid valve may be coupled by its piston structure to the ring so that, in response to current supplied to the solenoid valve, the retaining ring will be displaced to collapse or disengage the split bushing and allow the plug to be separated from the container under the influence of the fluid pressure, thereby to discharge the fluid within the container.

3,750,756
MECHANICAL GRADE CONTROL

James M. Livingston, Orangeburg, S.C., assignor to Herman E. Jackson; H. M. Mims, Jr. and George S. Hill, part interest to each

Filed Feb. 10, 1972, Ser. No. 225,199
Int. Cl. E02f *3/76*
U.S. Cl. 172—4.5 **25 Claims**

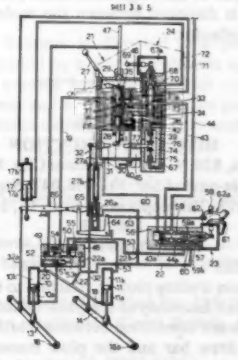


A mechanical device is disclosed for attachment to the mold board of a motor grader, which automatically controls the slope and depth of the grade to conform with a pre-determined slope and depth.

3,750,757
CONTROL DEVICES FOR AGRICULTURAL TRACTOR IMPLEMENTS

Renato Saetti, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

Filed May 18, 1972, Ser. No. 254,671
Claims priority, application Italy, May 27, 1971, 68781 A/71
Int. Cl. A01b *63/112*
U.S. Cl. 172—9 **16 Claims**



A control arrangement for a three point coupling of the type provided on the rear of tractors for the connection of agricultural implements is disclosed. The control arrangement com-

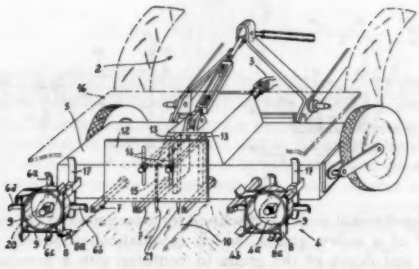
prises independent hydraulic actuators for each of the three points of the three point coupling. The hydraulic actuators are independently operable and the control arrangement includes means interconnecting two of the actuators to control the transverse inclination of an implement connected to the coupling, both automatically and under the control of a selector device for selecting a desired inclination. The control device can also adjust the height of the implement and the longitudinal inclination in addition to being operable to allow the implement to 'float' with no vertical or transverse control, to follow the surface of the ground over which it is drawn.

3,750,758

FARMING IMPLEMENT FOR RIDGING

Joseph Emmanuel Bancel, Les Premices, Bourg-Argental, France

Filed June 7, 1971, Ser. No. 150,396
Claims priority, application France, Nov. 13, 1970, 7041638
Int. Cl. A01b *33/00*
U.S. Cl. 172—58 **7 Claims**



This tractor-hauled implement is intended essentially for forming a pair of parallel trenches and at the same time, between these trenches, a ridge, notably for cultivating asparagus, and comprises to this end non-adjacent or outermost longitudinal shafts emerging from a casing and carrying rotary tools revolving in opposite directions and comprising each a plurality of cutters and a plurality of shovel-forming blades so as to cut the soil and throw the clods towards the centre of the implement ; a pair of ploughshares or coulters are disposed ahead of each tool for loosening the soil before said tools : a vertically adjustable transverse plate permits breaking the apex of the ridge thus formed and a longitudinal vertical, plate is disposed between the tools for acting as a double-faced deflector.

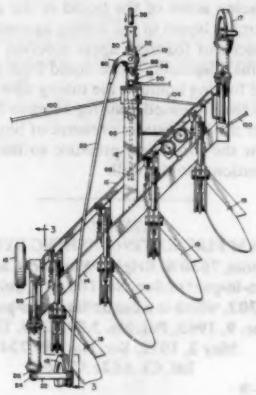
3,750,759

HITCH CONSTRUCTION

Cletus J. Geurts, 530 N. Melvin, Gibson City, Ill.

Continuation-in-part of Ser. No. 666,047, Sept. 7, 1967, Pat. No. 3,642,073. This application Sept. 15, 1971, Ser. No. 180,559
Int. Cl. A01b *59/00*
U.S. Cl. 172—285 **17 Claims**

A multi-bottom trailing plow is attached to the draw bar of a tractor. The hitch assembly of the plow includes a pair of vertical rods which are connected between a hitch plate fastened to the tractor draw bar and the plow frame. An expansion cylinder drives the frame relative to the hitch plate to adjust the vertical separation of the frame from the hitch plate and ground level. This arrangement also controls the depth which the plow bottoms penetrate the soil. A lever arm linkage extends from one of the vertical rods and to a tail wheel of the plow to provide for desired turning operation of the tail wheel of the plow. The hydraulic system for the expansion cylinder is



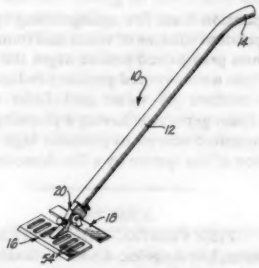
controlled from the tractor. Thus, the position of the plow frame can be accurately and completely controlled to provide a level working depth by the plow bottoms.

3,750,760

DUAL ACTION GARDENING IMPLEMENT

Phillip B. Shockley, 1765 N. Puente Ave. - Sp. 39, Baldwin Park, Calif.

Filed Nov. 29, 1971, Ser. No. 202,830
Int. Cl. A01b *1/00*
U.S. Cl. 172—374 **11 Claims**



A gardening implement comprising a handle mounting at its lower end front and rear blades with front and rear cutting edges. At least the rear blade is hinged to rock up and down and is provided with adjustment screws to adjustably limit the rocking angle of the rear blade and secure the rear blade against rocking in a selected angular position, in a manner such that the blades may be moved back and forth across the ground surface to cut weeds and the like during both the front and back strokes, and the rear blade may swing down to dig into the ground during the back strokes.

3,750,761

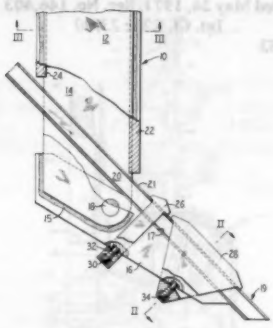
RIPPER WITH TOP-MOUNTED EXTENDIBLE TIP

Roger M. Smith, Joliet, Ill., and Loyal O. Watts, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 27, 1971, Ser. No. 183,952
Int. Cl. A01b *23/02*, *13/08*
U.S. Cl. 172—719 **6 Claims**

A ripper having a ground-engaging tip which may be progressively extended from its holder member to compensate for wear during use. The tip is externally mounted upon the

top surface of a lower portion of the ripper shank and is held rigidly in place by means of ripper shank protectors which serve as frictional engagement members which clamp and



hold the tip. The tip member is cut from common bar stock and has no apertures, detents, or other specially-machined and costly connector means.

3,750,762

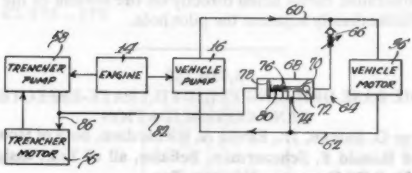
SPEED CONTROL SYSTEM FOR VEHICLE MOUNTING A WORK PERFORMING DEVICE

William C. Eston, Omaha, Nebr., assignor to Omsteel Industries, Inc., Omaha, Nebr.

Filed Aug. 19, 1971, Ser. No. 173,025

Int. Cl. E02f *5/06*

U.S. Cl. 173—8 **5 Claims**



A speed control system for a vehicle mounting a work performing device such as a trencher for controlling the speed of the vehicle inversely to the amount of work being performed by the work performing device. The vehicle includes a hydraulic drive motor and apparatus is provided for sensing the amount of work to be performed by the work performing device and for selectively controlling the flow of hydraulic fluid in a bypass for the hydraulic drive motor to thereby control the speed of the vehicle.

3,750,763

REACTION POST FOR AN EARTH BORING MACHINE

James W. Young, Irving, Tex.; George A. Cason, Dallas, Tex., and Ernest O. Kunkel, Nevada, Mo., assignors to Dresser Industries, Inc., Dallas, Tex.

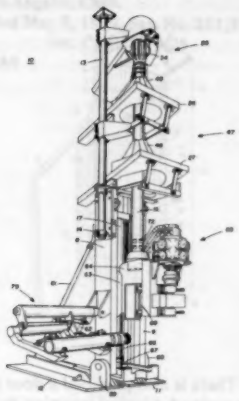
Division of Ser. No. 7,923, Feb. 2, 1970, Pat. No. 3,659,661.

This application Oct. 29, 1971, Ser. No. 193,811

Int. Cl. E21c *11/00*

U.S. Cl. 173—34 **1 Claim**

An apparatus for supporting the earth formations above an earth boring machine. The lower portion of a reaction post is connected to the support columns of the earth boring machine and the upper portion of the reaction post contacts the earth formations. The upper and lower portions are connected by a threaded connection and a spring maintains a constant rotary



force on the threaded connection thereby supplying a constant axial force through the reaction post to the earth formations.

3,750,764

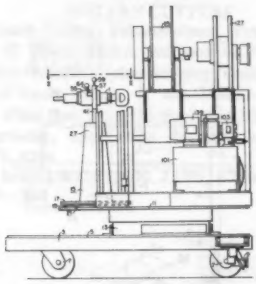
POWER HAMMER WITH REACTION FORCE ABSORBING MEANS

John P. Vogeleer, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 29, 1971, Ser. No. 184,677

Int. Cl. E21c *11/02*

U.S. Cl. 173—43 **12 Claims**



A pneumatic hammer is disposed in a pneumatic recoil device and positioned by a pair of hydraulic cylinders so that by operating a control lever an operator can position the pneumatic hammer and by depressing a foot pedal he can control the striking force delivered by the pneumatic hammer.

3,750,765

REDUCING OF NOISE FROM PILING RIGS AND THE LIKE

Hugh C. Shelbourne, Ongar, and Albert E. J. Selfe, Thundersley, both of England, assignors to Morrison & Morrison Limited

Filed Nov. 4, 1971, Ser. No. 195,565

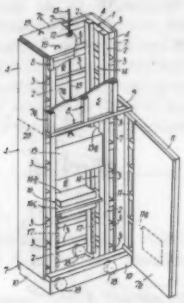
Claims priority, application Great Britain, Nov. 17, 1970, 54,551/70

Int. Cl. E02d *7/06*

U.S. Cl. 173—46 **17 Claims**

A pile driving rig mounted on a free standing transportable frame. A sound reducing casing is provided on the frame which comprises a chamber for enclosing a pile driving means

and all of a pile above ground. An aperture is provided in the top of the casing for the passage of control means for the pile



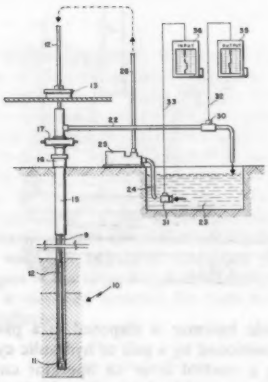
driving means. There is also provided a door in an upstanding side wall of the casing for lateral insertion therein of a pile to be driven.

3,750,766

CONTROLLING SUBSURFACE PRESSURES WHILE DRILLING WITH OIL BASE MUDS

Gene D. Thompson, and Louis A. Carlton, both of New Orleans, La., assignors to Esso Production Research Company, Houston, Tex.

Filed Oct. 28, 1971, Ser. No. 193,322
Int. Cl. E21b *47/10*
U.S. Cl. 175—50 **17 Claims**



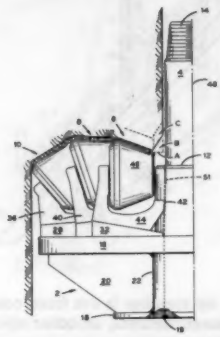
The water percents by volume of input and output circulating oil muds are measured and compared during well drilling operations. When the water percent measurements are made at the surface, the output measurements lag the input measurements so that the same portions of drilling mud are compared. The measurements are made continually (at frequent intervals) or continuously. Accurate measurement of the liquid volume of the water phase emulsified in the oil mud, positive or negative differentials of in and out water percents and overall changes in water percents will determine whether the formation pore pressure is exceeding the hydrostatic pressure imposed by the drilling mud. When formation pressure exceeds the hydrostatic pressure, water from the wet subsurface formations being penetrated enters the well bore and is imbibed (mixed and probably emulsified) in the oil mud. Control of the well is maintained by adjusting drilling mud weight.

3,750,767

ROLLING CUTTER MOUNTING IN BIG HOLE REAMING BIT

Rudolf Carl Otto Pessier, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed May 24, 1971, Ser. No. 146,403
Int. Cl. E21c *23/00*
U.S. Cl. 175—53 **5 Claims**



A reaming type rock boring drill having an innermost cutter, rotatably supported as a beam. A sleeve or other support member disposed close to, but spaced apart from, the drill stem that forms a portion of the bit body serves as a trunnion or journal for the inner end of the load pin of the cutter bearing assembly. Drilling with such an assembly results in an uncontacted kerf of rock contiguous with the pilot hole. This kerf is disintegrated by mounting the innermost cutter so that the forces applied to the borehole bottom by this cutter act along a line directed into the formation and inwardly toward the pilot hole. As a result, a much higher cutting efficiency is achieved, when contrasted with earlier dispositions in which the innermost cutter acted directly on the bottom of the bore hole immediately adjacent the pilot hole.

3,750,768

OIL BASE DRILLING FLUID FILTRATE-EFFECTED SAND CONSOLIDATION

George O. Suman, Jr., Edwin A. Richardson, both of Houston, and Ronald F. Scheuerman, Bellaire, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 27, 1972, Ser. No. 221,402
Int. Cl. E21b *21/04, 33/138*
U.S. Cl. 175—72 **4 Claims**

A permeable water-containing earth formation is consolidated while a borehole is being drilled into that formation by circulating as a drilling fluid an oil solvent solution containing a mixture of an epoxide and imine that forms an epoxy resin when mixed with water and a suspension of finely divided solid particles that forms a filter-cake permitting a selected amount of filtrate invasion into a permeable earth formation.

3,750,769

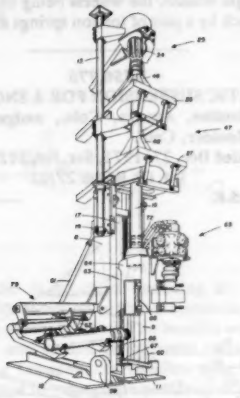
DRILL PIPE POSITIONER FOR EARTH BORING MACHINE

James W. Young, Irving; George A. Cason, Dallas, both of Tex., and Ernest O. Kunkel, Nevada, Mo., assignors to Dresser Industries Inc., Dallas, Tex.

Division of Ser. No. 7,923, Feb. 2, 1970, Pat. No. 3,659,661.
This application Oct. 29, 1971, Ser. No. 193,896
Int. Cl. E21b *19/00*
U.S. Cl. 175—85 **1 Claim**

A drill pipe positioner that will lift, position and release a section of drill pipe in proper relation to the drill head and other elements of an earth boring machine and by reversing

the action will attach to a section of drill pipe, lift and release it for removal and stacking. A first arm pivots on the support



columns and a second arm unit pivots on the first arm. Grippers are attached to the second arm unit for gripping and holding a section of drill pipe.

3,750,770

APPARATUS FOR EXCAVATING DEEP HOLES AND TRENCHES

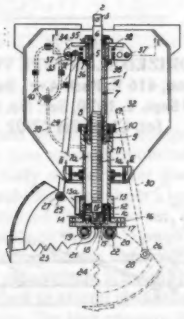
Giuseppe Botto, Via Della Rovere 7, Segrate, Italy

Continuation-in-part of Ser. No. 791,701, Jan. 16, 1969, Pat. No. 3,640,353. This application Nov. 15, 1971, Ser. No. 198,665

Claims priority, application Italy, Mar. 1, 1971, 21195 A/71

Int. Cl. E21b *27/00, 41/00*

U.S. Cl. 175—173 **8 Claims**



An apparatus for excavating holes and trenches, including a multi-jaw grab bucket with a driving rod having a screw-threaded section. The jaws are articulated at one point through connecting arms to a nut screwed on said screw-threaded section and at another point to an articulation member idle on the extremity of said driving rod. The nut screw has a sleeve extending at least over a portion of the driving rod beyond said screw-threaded section and defining therebetween an interspace for a lubricant. A counter sleeve member telescopically engages the sleeve and surrounds at least said screw-threaded section of said driving rod and defining therebetween a further interspace for lubricant. The counter sleeve member is connected with said articulation member. One of the interspaces is connected to an external reservoir with at least one expandable wall.

3,750,771

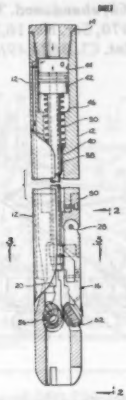
UNDERREAMER HAVING VARIABLE ARM EXTENSION

Edward T. Cugini, Brea, Calif., assignor to Grant Oil Tool Company, Los Angeles, Calif.

Filed May 8, 1972, Ser. No. 251,394

Int. Cl. E21b *9/26*

U.S. Cl. 175—269 **3 Claims**



An underreamer for enlarging a well bore wherein a plurality of cutter cones are rotatably supported on pivoted cutter arms which pivot outwardly from the body of the tool in response to fluid pressure. The amount of outward pivotal movement is adjustable without the removal and replacement of the cutter arms. This permits the same tool body and pivotable arms to be used for bore enlargements to different diameters relative to the contracted diameter of the tool.

3,750,772

ROTARY CUTTERS

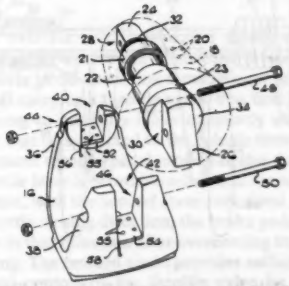
Pieter Lawrence Venter, Johannesburg, Transvaal Province, Republic of South Africa, assignor to Paddy McDonnell (Proprietary) Limited, Johannesburg, Transvaal Providence, Republic of South Africa

Filed Dec. 27, 1971, Ser. No. 212,502

Claims priority, application Republic of South Africa, June 28, 1971, 4204

Int. Cl. E21c *13/00, 23/00;* **E21b** *9/12*

U.S. Cl. 175—364 **4 Claims**



The invention provides for means for mounting a rotary cutter so that the cutter is reclaimable or more easily reclaimable than hitherto known to the applicant. By this means the journal and load pin rotatably supporting the cutter is made in one. Furthermore there is provided in a saddle supporting the journal, an angular notch to restrain the journal against rotation. Still further, there is provided a saddle to support the journal, the saddle having a detachable limb having an angular notch to restrain the journal against rotation.

3,750,773

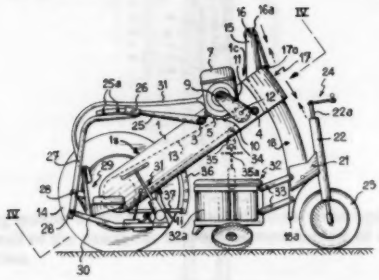
STRADDLE TRACTOR INCLUDING AN IMPROVED TRACTOR FRAME

Emile Bobard, Beaune, Cote D'Or, France, assignor to Nathan Gilbert, Sherman Oaks, Calif.

Continuation-in-part of Ser. No. 709,756, March 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 549,711, May 12, 1966, abandoned. This application Mar. 4, 1970, Ser. No. 16,523

Int. Cl. B62d *49/00*

U.S. Cl. 180—1 F **14 Claims**



Improvements in tractors of the straddle type, comprising a relatively simple deformable frame of low cost, and means for adjusting the straddle height according to the use of the tractor. The frame sides are of inverted V-shape, providing a free space at their lower portions permitting convenient coupling to implements with large transverse dimensions. The frame is formed by a rigid hoop of inverted U-structure which may be inclined, the tractor power unit being mounted on the transverse portion of the hoop. The power of the driving unit is transmitted to driving wheels respectively mounted on the extremities of the arms of said hoop.

3,750,774

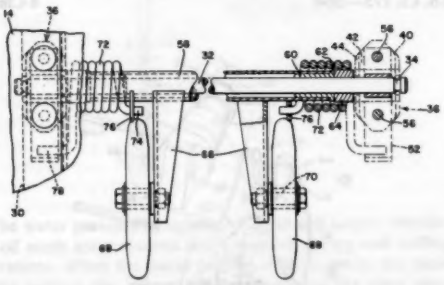
SNOWMOBILE BOGIE WHEEL ASSEMBLY

Robert Lee Trapp, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Nov. 11, 1971, Ser. No. 197,720

Int. Cl. B62d *55/16*

U.S. Cl. 180—5 R **4 Claims**



A snowmobile has a fore-and-aft channel-like main frame with footrests extending outwardly from the opposite sides of the main frame and an endless track mounted within and connected to the main frame by a plurality of bogie wheel assemblies, the wheels of which engage the inner surface of the lower ground-engaging run of the track. Each bogie wheel assembly includes a transverse shaft having its opposite ends attached to the underside of the opposite footrest by bracket means, which include a pair of members bolted to the underside of the footrest, one of the members having a transverse bore journaling the shaft and an abutment for limiting the axial shifting of the shaft, while the other member includes a U-shaped recess which receives the shaft and clamps it to the first member. A sleeve is rotatably mounted on each shaft and includes a pair of trailing arms respectively journaling axially transverse bogie wheels, the wheels being biased downwardly against the track by a pair of torsion springs around the sleeve.

3,750,775

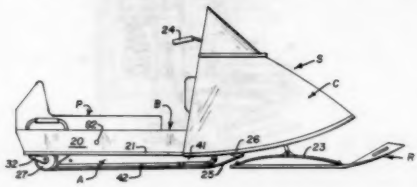
PNEUMATIC SUSPENSION FOR A SNOWMOBILE

Louis A. Valentine, Aurora, Colo., assignor to Henry L. Valentine, Boulder, Colo.

Filed Dec. 27, 1971, Ser. No. 212,116

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **10 Claims**



Herein disclosed is a pneumatic suspension for the drive track of a snowmobile, mounted between the forward drive wheels and the rearward idler wheels of the snowmobile drive track. This suspension includes an upper framework attached to the snowmobile body between the upper and lower reaches of the drive track, an elongated, resilient, pneumatic bag underneath the framework and longitudinally-extending, articulated track slides underneath the bag supporting the lower reach of the drive track. Each track slide is connected to the forward end of the framework, is turned downwardly from this connection to reach underneath the bag and is connected at its rearward end to the shaft of the idler wheels. The track and bag will yield to provide a smooth ride as the snowmobile travels over uneven terrain.

3,750,776

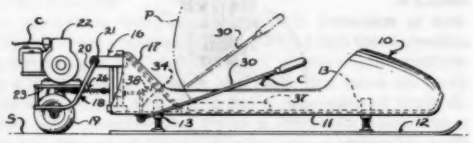
MOTORIZED SLED TYPE VEHICLE

William J. Stevenson, 416 E. Park Ave., Barberton, Ohio

Filed Sept. 2, 1970, Ser. No. 68,826

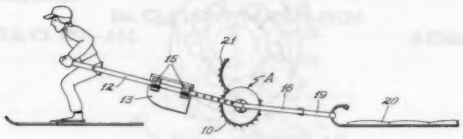
Int. Cl. B62m *27/02*

U.S. Cl. 180—6 R **8 Claims**



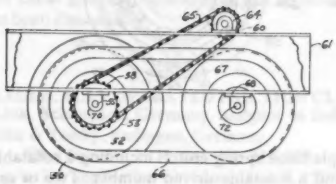
Motorized sled-type vehicle has power-driven traction wheel carried by motor mount depending from a swivel at the rear of vehicle body supported on laterally spaced skii-type runners. Motor mount controlled by operator, seated in vehicle body, to propel vehicle according to tractional power applied to wheel, and to steer conveyance by turning of motor mount on the swivel. With variable tractional operation of traction wheel against riding surface motor mount pivots toward and from rear of vehicle body according to traction power applied by motor, while runners adjust with respect to body to remain flatwise on riding surface, independently of vertical movement of rear of conveyance body incident to pivotal movement of the motor mount.

3,750,777
PROPULSION UNIT FOR SKIER
Richard G. Thompson, 312 County Rd. 5, Stillwater, Minn.
Filed Apr. 7, 1972, Ser. No. 241,960
Int. Cl. B62m 27/02
U.S. Cl. 180—6 R **11 Claims**



A cleated roller is provided including an internal combustion engine mounted on a frame connected through the roller hub to one of two handles. The handles are connected in parallel relation and extend on opposite sides of the roller. Means extending between the handles near the free ends thereof are adapted to engage the posterior of a skier to push him over the snow covered surface.

3,750,778
TRACTION DEVICES
Thomas Arthur Watts Knott Watson, 2720 Guyer, Apt. 24, Montreal 2me, Quebec, Canada
Continuation-in-part of Ser. No. 26,037, April 6, 1970, abandoned. This application Jan. 18, 1971, Ser. No. 107,171
Int. Cl. B62d 55/02
U.S. Cl. 180—9.36 **6 Claims**

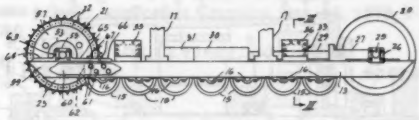


A vehicular traction system may comprise high pressure large outer diameter tires rotatably mounted about a horizontal axis and substantially smaller outer diameter lower pressure tires, also rotatably mounted about a horizontal axis.

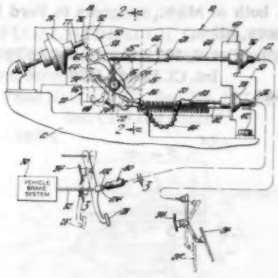
In the more generalized case, however, the lower pressure tire need not necessarily be smaller in outer diameter than the high pressure tire. It may be the same size or even larger in diameter. The basic requirement is for the high pressure tire's outer peripheral surface to extend lower than the lowest point of the low pressure tire. The high pressure tire will then always be in surface contact on all surfaces, whereas the low pressure tire will only make surface contact on uneven ground or soft surfaces. A track may also be placed over the low pressure tires.

3,750,779
TREAD FRAME AND DETACHABLE DRIVE SPROCKET SUPPORT
Francis R. Huseman, 1110 Wood St., Griffith, Ind.
Filed Nov. 9, 1971, Ser. No. 197,091
Int. Cl. B62d 55/12
U.S. Cl. 180—9.62 **8 Claims**

Detachable bearing carrier for the drive sprocket of a track type excavator accommodating replacement of the drive sprocket seals and bearings by removal of the sprocket by axial pulling movement thereon. The bearing carrier forms an extension of the tread frame for the continuous traction tread device of the excavator, and is detachably mounted thereon to be readily removed from the frame and end of the drive sprocket, to enable the drive sprocket to be pulled off, without jacking up the tread frame.



3,750,780
BRAKE OPERATED THROTTLE OVERRIDE DEVICE
Michael J. Danek, Laingsburg, N.J., assignor to General Motors Corporation, Detroit, Mich.
Int. Cl. B60k 29/00
U.S. Cl. 192—3 R **2 Claims**



A throttle override cable, a beaded chain, and a cable length self-adjusting device are connected in series between the vehicle brake pedal and a first throttle lever that is fixed to a throttle shaft carrying a throttle valve. The first lever is coupled by a spring to normally move conjointly with a second throttle lever that is connected to the vehicle throttle pedal to normally transmit throttle pedal motion to the throttle valve. The first throttle lever is pivotable relative to the second throttle lever so that, with the second lever restrained from movement in a throttle closing direction, the brake pedal may pivot the first lever in that direction after overcoming the bias of the coupling spring. The beaded chain provides sufficient slack to permit normal control of the throttle valve by the vehicle throttle pedal with the brake pedal released and the cable length adjuster adjusts the effective length of the override cable to prevent attempted movement of the throttle valve past its idle position.

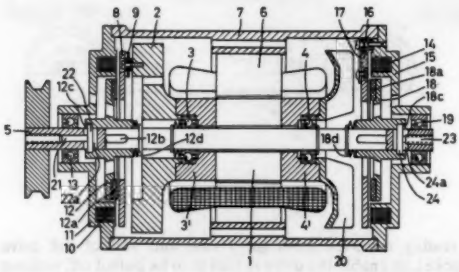
ERRATA

For Classes 180—79.1 thru 188—345 see:
Patents Nos. 3,750,833 thru 3,750,857

3,750,781
ELECTRIC-MOTOR WITH BUILT-IN ELECTROMAGNETIC DISK CLUTCH AND BRAKE

Karl Lengsfeld, Paul Bonnerstr. 15, Plankstadt, Germany

Filed June 24, 1971, Ser. No. 156,453
Claims priority, application Germany, June 26, 1970, P 20 31 834.7
Int. Cl. F16d 67/06
U.S. Cl. 192—18 B 3 Claims



An electric-motor controlled variable speed drive with built-in electro-magnetic disk clutch and brake especially for industrial sewing machine is disclosed having a rotor, flywheel and clutch magnetic armature ring mounted as a remit on the driven shaft, and a combined clutch and brake axle disk is mounted on the shaft externally adjustable axially thereon.

3,750,782
HIGH SPEED OVERRUNNING CLUTCH

Siro J. Costantini, Dearborn Heights, and Thomas R. Stockton, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 8, 1971, Ser. No. 187,722
Int. Cl. F16d 15/00
U.S. Cl. 192—45 4 Claims

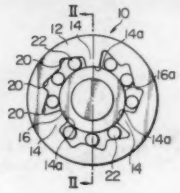
An overrunning clutch adapted especially for use in an engine starter motor drive for a high speed gas turbine engine comprising a driving inner race, a cammed outer race adapted to be connected drivably to a gas turbine gasifier, clutch rollers disposed in cam recesses between said races, friction blocks situated between the individual rollers and adjacent reaction walls on the outer race and springs enclosed within the reaction blocks, the latter limiting the degree of tangential movement of the rollers and retarding their rate of displacement while controlling the orientation of the rollers with respect to the outer race.

3,750,783
OVERRUNNING CLUTCH FOR USE IN AN AUTOMOTIVE POWER TRANSMISSION

Kunio Ohtsuka, Naka-ku, Yokohama, and Wataru Ishimaru, Ashahi-ku, Yokohama, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Apr. 12, 1972, Ser. No. 243,381
Claims priority, application Japan, Aug. 20, 1971, 46/74290; Aug. 23, 1971, 46/74892
Int. Cl. F16d 41/06
U.S. Cl. 192—45 5 Claims

An overrunning clutch adapted to permit free rotation of the inner and outer wheels with respect to each other when one of the inner and outer wheels rotates in one direction. Either one of the inner and outer wheels is formed with at least three radially extending projecting portions at circumferentially equally spaced positions, which projecting portions engage with the opposing peripheral wall of another one of the

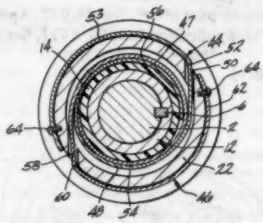


inner and outer wheels to prevent deflection of the inner and outer wheels with respect to each other, and at least two cam surfaces at circumferentially equally divided positions between the adjacent projecting portions. At least two rollers are disposed about the cam surfaces between the inner and outer wheels so that the smooth operation is obtained.

3,750,784
MULTIPLE BAND SPRING CLUTCH

John Shum, Jr., Valley Station, Ky., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 28, 1970, Ser. No. 101,821
Int. Cl. F16d 41/20
U.S. Cl. 192—81 C 9 Claims

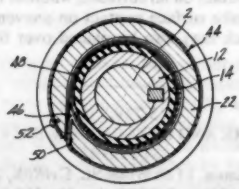


A multiple band spring clutch including a rotatable driving member and a rotatable driven member. Two or more band spring members are provided between the driving and driven members of each spring having one end attached to the driven member and its free end coiled about a portion of the outer surface of said driving member.

3,750,785
BAND SPRING CLUTCH

Lester E. Smith, Herrin, and Chao H. Lin, Marion, both of Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 28, 1970, Ser. No. 101,820
Int. Cl. F16d 41/20
U.S. Cl. 192—81 C 10 Claims



Band spring clutch assembly including a rotatable driving member and a rotatable driven member. The driving member has its outer surface formed of elastomeric material with which the band spring is in engagement when the driving member is driving the driven member.

3,750,786

DEVICE AND METHOD FOR STOPPING A POWER DRIVEN UNIT AT A PREDETERMINED POSITION

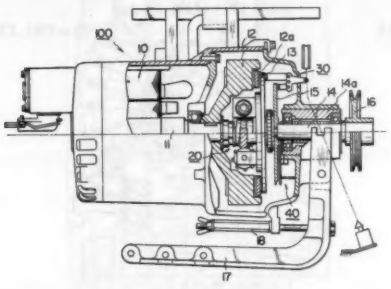
Yukio Toyohama, Kawasaki-shi, and Kiyoshi Kobari, Ota-ku, Tokyo, both of Japan, assignor to Fuji Denki Srizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Dec. 3, 1971, Ser. No. 204,557

Claims priority, application Japan, Dec. 11, 1970, 45/110730

Int. Cl. F16d *71/04*; D05b *69/26*

U.S. Cl. 192—146 4 Claims



There is disclosed in connection with a device adapted to stop a driven unit at a predetermined position, said device comprising a driving clutch plate attached to rotor shaft of a motor, a driven clutch plate capable of being engaged with or separated from said driving clutch plate, at least one planetary gear, an intermediate disk, a reduction gear mechanism, and a brake mechanism adapted to cause braking of said driven clutch plate and intermediate disk. Furthermore a method adapted to cause effective operation of the above-mentioned device has been disclosed.

3,750,787

HYDRAULICALLY OPERATED FRICTION CLUTCH

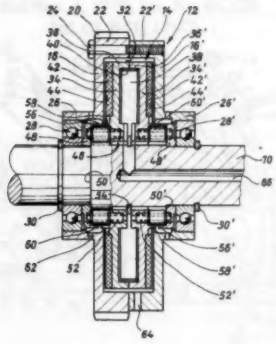
Helmut Link, Schanbach, Germany, assignor to Index-Werke K G Hahn & Tessky, Esslingen, Germany

Filed Dec. 30, 1971, Ser. No. 214,294

Claims priority, application Germany, Jan. 7, 1971, P 21 00 572.1

Int. Cl. F16d *25/00*

U.S. Cl. 192—85 AB 8 Claims



An inner clutch half including two axially movable clutch parts with lateral outer friction faces, is mounted within an outer clutch half which has inner friction faces cooperating with the outer friction faces of the inner clutch half. Fluid pressure in a chamber bounded by the clutch parts of the inner clutch half, forces the clutch part away from each other against the action of springs so that the outer and inner friction faces engage each other and the axial forces in the clutch balance each other.

3,750,788

CLUTCH OR BRAKE

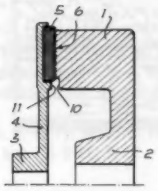
Rolf Heinemann, Fraubronnstrasse 28, 7000 Stuttgart 70 (Plieningen), Germany

Filed Nov. 8, 1971, Ser. No. 196,546

Claims priority, application Germany, Nov. 12, 1970, P 20 55 678.0

Int. Cl. F16d *11/00*

U.S. Cl. 192—107 R 12 Claims



A friction brake or friction clutch in which the wear-resistant brake or clutch surface or surfaces and the associated brake or clutch lining or linings which are adapted to be worn consist of equal sets of directly adjacent teeth of an isosceles triangular shape which fully interengage with each other when the brake or clutch is engaged.

3,750,789

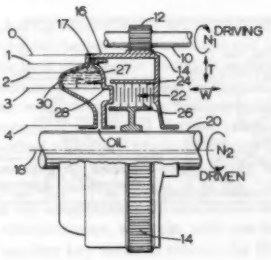
CENTRIFUGAL HYDRAULIC OPERATED CLUTCH

Benno E. Buchelt, Klagenfurt, Austria, assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 9, 1971, Ser. No. 197,099

Int. Cl. F16d *43/284*

U.S. Cl. 192—105 A 2 Claims



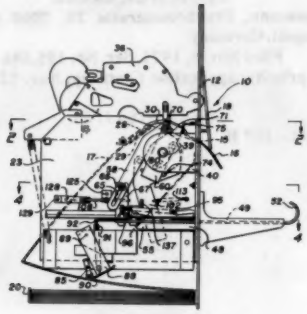
A hydraulic actuated disc clutch particularly suitable for helicopter use has a built in torque control function varying with time resulting in a scheduled slipping time satisfying start requirements. The structure makes use of centrifugal force generated oil pressure operating with an oil ring generated in a rotating cylinder so that the integrated force resulting from local oil pressure times the radial area increment of the oil ring fed during engagement time acts on an engagement piston for the clutch An oil ring width defining end wall accomplishes a time variation of filling time by speed up or delay in filling time and thus in formation of radial area of the oil ring. This results from a change in the shape of the end wall controlling the width of the oil ring; and hence, controlling the timing of the variation in clutch engaging force to a desired time programmed variation.

3,750,790

TICKET VENDING MACHINE

Derrick Cresswell-Clough, 786 Goldstream Dr., Richmond, B.C., Canada

Filed Nov. 5, 1971, Ser. No. 195,998
Int. Cl. B65h *17/00*
U.S. Cl. 194—2 **21 Claims**



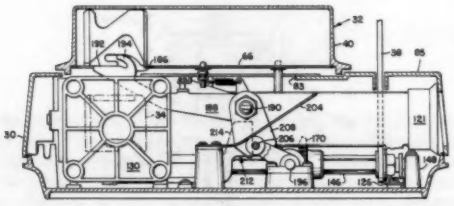
A coin-released vending machine for tickets having means for dispensing a ticket each time the machine is operated, means for preventing more than one ticket from being dispensed during each operation, and means for preventing a ticket from being drawn out of the machine if it is not released by the desired coin or coins.

3,750,791

LARGE CHARACTER SIGN APPARATUS

Boone K. McReynolds, Concord, and Fritz Haas, Walnut Creek, both of Calif., assignors to Dymo Industries, Inc., Everyville, Calif.

Filed Nov. 23, 1970, Ser. No. 92,002
Int. Cl. B41j *1/16, 1/22*
U.S. Cl. 197—6.7 **24 Claims**



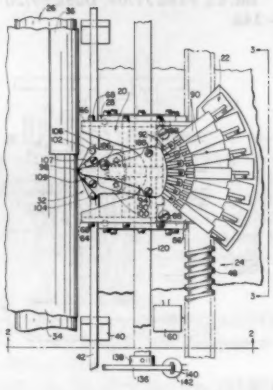
A machine for printing, embossing or die cutting characters or indicia on a longitudinally extending strip of material to produce a sign or label. The strip is fed into the machine subjacent a carousel or drum in which a plurality of circumferentially spaced slugs are carried, each slug being adapted for producing a printed, embossed or die cut character on the strip upon proper actuation. The carousel is rotatably mounted to permit a selected slug to be appropriately positioned at the station whereat the character is produced on the strip. Actuation of a handle moves the selected slug downwardly and adjacent to the strip, and further handle movement forces the slug against the strip to perform the character producing operation thereon. Release of the handle frees the slug from the strip, incrementally advances the strip into position to receive a succeeding character, and raises the slug back into the carousel so that the latter may be rotated to position the next required slug character for operation.

3,750,792

AUTOMATIC MEDIA THICKNESS COMPENSATOR FOR A PRINTER

George N. Liles, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Aug. 4, 1972, Ser. No. 278,174
Int. Cl. B41j *3/50*
U.S. Cl. 197—1 R **4 Claims**



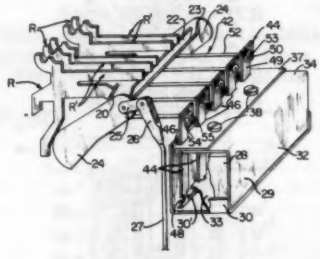
A carriage having a print head thereon is traversed along a platen to enable the print head to print along a line of printing in a serial-type printer. The print head moves with the carriage and is also mounted thereon for independent movement towards and away from the platen. A leaf spring biases the print head towards the platen, and a sensing finger, secured to the print head, contacts and glides along a thin, self-supportable, flexible tape which overlies media of various thickness mounted on the platen to maintain the print head (like a wire matrix) a predetermined distance from the media enabling the print head to print on various thicknesses of media automatically.

3,750,793

OPERATIONAL INPUT CONTROL MECHANISM

Harold D. Becker, Riverton, Wyo., assignor to Datel Corporation, McLean, Va.

Filed Oct. 22, 1970, Ser. No. 82,896
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **4 Claims**



An electromagnetic actuating device controls functional operations in a keyboard printer. In the printer, movement of each operational interposer is controlled by a lightweight armature plate having an adjustable actuating rod which when the electromagnetic means for each armature plate is energized will operate upon the end of an interposer to release the interposer to perform a selected functional operation in the

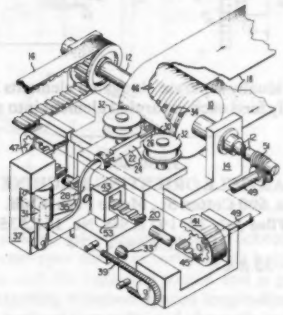
printer, such as, "tab," "backspace," "space," "index" or "return"; and, when deenergized, the armature plate will follow the return movement of the interposer to its original disposition in preparation for the next functional operation without the aid of a special return mechanism.

3,750,794

HIGH SPEED PRINT DRUM WITH TRAVELING PRINT HAMMER

John O. Griggs, Jr., Exton, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 1, 1970, Ser. No. 94,111
Int. Cl. B41j *1/52, 9/04*
U.S. Cl. 197—49 5 Claims



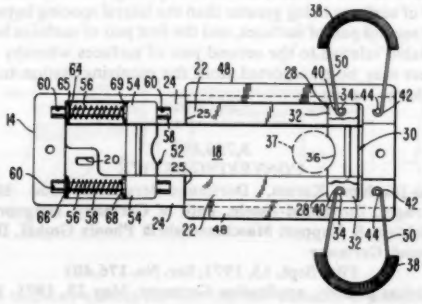
A high speed serial printing device which employs a rotatable type drum having a plurality of adjacent circumferential columns each containing a row of type characters extending over a sector of its associated column, the rows of characters of the odd and even numbered columns of the drum being alternately staggered and aligned in different sectors of the drum. A single hammer is moved in a direction parallel to the axis of the drum at such a substantially constant velocity as to cover two adjacent circumferential columns of the drum and the rows of type characters contained therein during each revolution of the drum.

3,750,795

CONSTANT FORCE SPRING CARRIER RETURN MECHANISM

Harry L. Wallace, Garden City, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 2, 1970, Ser. No. 86,120
Int. Cl. B41j *19/72*
U.S. Cl. 197—68 9 Claims



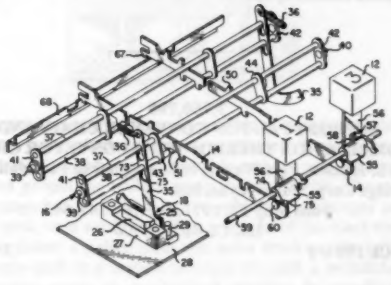
Mechanism for biasing a carrier of a printing apparatus for yielding resisting movement thereof along a defined track extending parallel to a print line from a starting position and for returning the displaced carrier back to the starting position. A frame in the mechanism forms an elongated opening which serves as the track and guides an extension of the carrier for to and fro motion parallel to the print line. Carried by the frame is a pair of biasing members in the form of bowed coiled springs which engage the extension of the carrier and resiliently yield to tabulation of the carrier in one direction parallel to a print line and urge return of the carrier in the other direction to its starting position. A shock absorber is positioned in the track at the starting position for absorbing the inertia of the return movement of the carrier and permitting the carrier to overshoot the starting position as its inertia is absorbed.

3,750,796

SELF-INTERLOCKING KEYBOARD

Peter H. DeGraff, Newfield, and James W. Lee, Ithaca, N.Y., assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 8, 1971, Ser. No. 113,430
Int. Cl. B41j *5/22*
U.S. Cl. 197—107 2 Claims



A keyboard having magnetically actuated reed switches and interposers swingable between the switches and adjacent magnets for opening and closing the switches in response to key-operated mechanism. Each interposer is supported from a pair of spaced shafts which constitute a bail assembly, the spaced shafts being operable in rotary fashion about a common center, and toothed racks are carried between the shafts and engageable therewith to provide interlocking means for the keyboard. This interlocking means is of the "non-entering" type realizable by cooperation of the shafts with the racks being slidable therebetween, wherein, with one key depressed, depression of another key tends to restore the first-mentioned key.

3,750,797

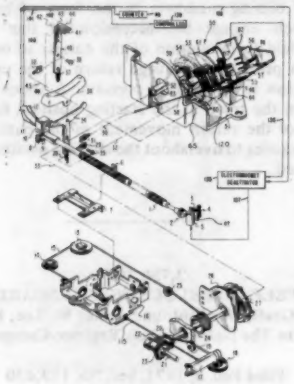
CARRIER POSITIONING AND TABULATION APPARATUS

Ronald E. Hunt, Austin, Tex., and Joseph S. Morgan, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,703
Int. Cl. B41j *25/18*
U.S. Cl. 197—176 5 Claims

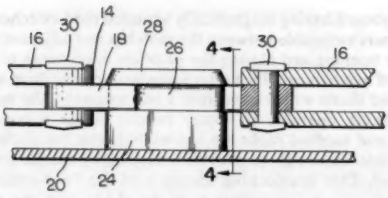
A carrier positioning and tabulation apparatus including a carrier, a leadscrew for controlling carrier advancement, an emitter wheel associated with the leadscrew having emitter spokes and a home emitter spoke, a stop device associated with the leadscrew for stopping rotation of the leadscrew and

advancement of the carrier, and a pin wheel rotatable synchronously with advancement of the carrier and having



settable pins for indicating the approach of a tabulation position which is defined by a signal generated upon the sensing of the home emitter spoke.

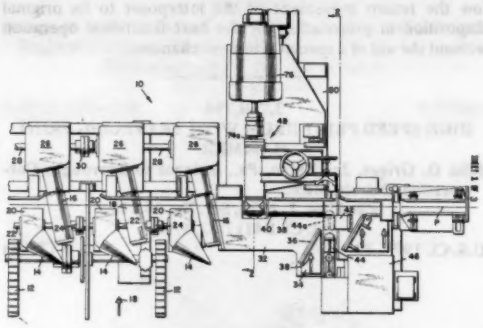
3,750,798
SUPPORT PAD FOR CONVEYOR CHAIN AND COMBINATION THEREOF WITH CONVEYOR CHAIN
Niels S. Hansen, Fort Wayne, Ind., assignor to Foundation and Bridge Corp., Fort Wayne, Ind.
Filed May 12, 1971, Ser. No. 142,640
Int. Cl. B65g *15/00*
U.S. Cl. 198—1 **3 Claims**



The specification discloses a conveyor chain running in a horizontal direction adjacent a stationary surface and a pad adapted for connection with the conveyor chain and slidable on the surface so as to hold the conveyor chain in spaced relation to the surface and eliminating wearing of the chain and surface.

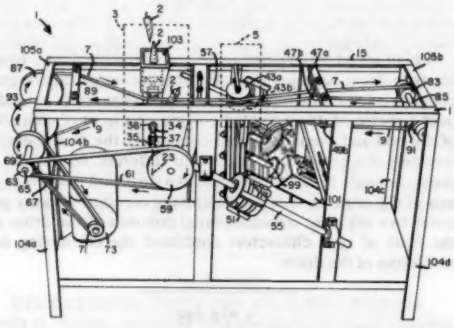
3,750,799
MATERIAL HANDLING APPARATUS
William J. Hill, Holden, and Kenneth L. Klusmier, Worcester, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.
Filed May 1, 1972, Ser. No. 249,691
Int. Cl. B65g *47/04*
U.S. Cl. 198—20 R **7 Claims**

A material handling apparatus which includes a pusher mechanism operating in conjunction with fixed and movable



stops to individually separate elongated elements from a batch and to laterally feed each separated element into a given path.

3,750,800
ARTICLE ORIENTING MACHINE
Pieter A. Sluis, 600 Cotton St., Menlo Park, Calif.
Filed July 12, 1971, Ser. No. 161,535
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AA **3 Claims**

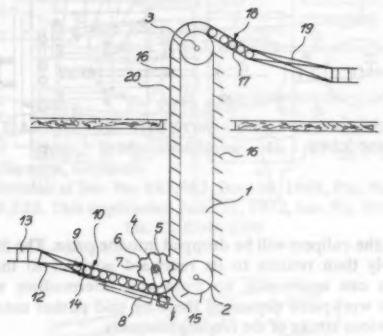


A machine for orienting tapered objects at a receiving station; carrier means for transporting said objects from said receiving station in proper oriented position to a discharge station; said receiving station including a first pair of laterally opposite surfaces and a second pair of laterally opposite surfaces, said first and second surfaces being vertically displaced relative to one another, the lateral spacing between said first pair of surfaces being greater than the lateral spacing between said second pair of surfaces, and the first pair of surfaces being movable relative to the second pair of surfaces whereby said object may be transported from the receiving station to the discharge station.

3,750,801
CONVEYING DEVICE
Hans-Joachim Karass, Dortmund-Berghofen, and Heinz Kroger, Dortmund-Assein, both of Germany, assignors to Holstein & Kappert Maschinenfabrik Phonix GmbH, Dortmund, Germany
Filed Sept. 13, 1971, Ser. No. 176,401
Claims priority, application Germany, May 23, 1971, P 21 26 313.8
Int. Cl. B65g *47/00*
U.S. Cl. 198—43 **8 Claims**

A receiving station for articles which are to be conveyed in a horizontal orientation is located at an upper level, and a sup-

plying station for these articles is located at a lower level. The supplying station comprises an element rotating about a horizontal axis provided in its periphery with equiangularly spaced article-receiving pockets each of which extends longitudinally of the axis of rotation. An article-feeding screw is located beneath the element extending normal to the horizontal axis and having a discharge end beneath the element for



discharging articles into the respective pockets thereof. An endless belt-conveyor moves in vertical path between the supplying station and the receiving station and is provided with outwardly extending members spaced longitudinally from one another and inclined forwardly and upwardly in the direction of movement of the belt, so positioned as to each engage an article accommodated in one of the pockets and to lift it out and convey it to the receiving station.

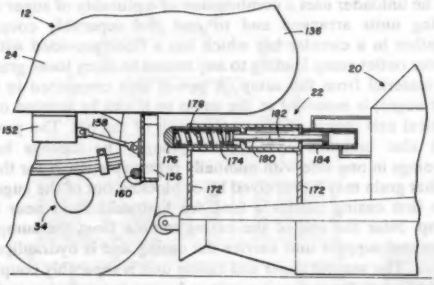
ERRATA

For Classes 198—115 thru 211—119.2 see:
Patents Nos. 3,750,858 thru 3,750,878, 3,750,880 thru 3,750,904

3,750,802
MATERIAL DELIVERY SYSTEM

John H. Holland, Norma, Okla., assignor to Arkansas Rock and Gravel Co., Murfreesboro, Ark.

Division of Ser. No. 852,345, Aug. 22, 1969. This application Dec. 10, 1971, Ser. No. 206,738
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 R 11 Claims

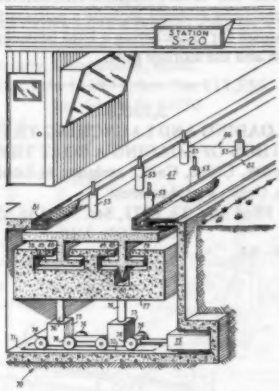


A delivery system for hot asphalt includes a plurality of semi-trailers. Each trailer includes a V-shaped hopper having an asphalt supporting beam extending longitudinally through it. A tube extends around the hopper for use in spraying lubricating oil into the hopper prior to the loading of asphalt. Each trailer further includes a conveyor for unloading asphalt from the hopper into a paving machine. The conveyor is driven by a hydraulic motor that is controlled by a valve. The valve is mounted in the trailer for activation by a prod mounted on the paving machine so that the operation of the conveyor is controlled from the paving machine.

3,750,803
RAPID TRANSPORTATION SYSTEM

Lee C. Paxton, 5016 Bremner Ct. No. 4, Sacramento, Calif.

Filed Nov. 11, 1971, Ser. No. 197,651
Int. Cl. B60l *13/00*; B65g *67/02*
U.S. Cl. 214—38 CC 13 Claims

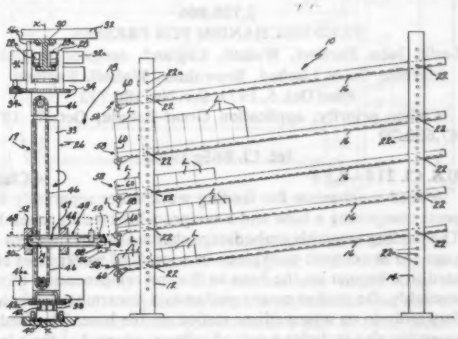


A rapid transportation system which includes a channel trackway with electromagnets positioned therealong. The magnets are individually energizable and are arranged to support and propel the pallets associated therewith. The pallets are arranged to support a motor vehicle, a passenger pod, a freight pod, or a work pod. The magnets of the trackway are used to divert a pallet from the main trackway to adjacent trackways such as a station or depot through a switch having no moving parts. A mechanical diverter is provided for preventing a pallet from becoming lodged in a partially switched condition to thereby tie-up the system.

3,750,804
LOAD HANDLING MECHANISM AND AUTOMATIC STORAGE SYSTEM

Jerome H. Lemelson, Metuchen, N.J., assignor to The Triax Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 805,315, March 7, 1969, Pat. No. 3,674,159. This application Mar. 22, 1972, Ser. No. 237,188
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A 24 Claims



A warehousing system comprising a storage rack for storing loads thereon and a stacker crane movable alongside of the

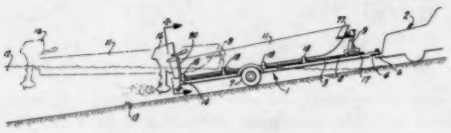
rack for depositing loads into and removing loads from selected storage locations in the storage rack. The stacker crane includes a load handling portion comprising a conveyor including power means for operating the conveyor. The conveyor may move a load from a selected storage location in the storage rack onto one end thereof, and then by powered operation of the conveyor, the load can be moved lengthwise of the load handling portion to a storage position on the latter, and then the conveyor can operate to pickup another load from a selected storage location and move it along the load handling portion and so on. In certain embodiments, transfer means mounted on the storage rack coact between the load handling portion and the storage rack for aiding in transferring loads between the latter. Certain embodiments of the disclosed warehousing systems include a powered load manupulator mechanism for transferring a load between the load handling portion and the storage rack.

3,750,805

BOAT LOADING AND LAUNCHING TRAILER AND METHOD OF LOADING A BOAT THEREON

Kelly D. Finney, Chico, Calif., assignor to Louis G. Chrysler, Jr., Chico, Calif., a part interest

Filed Apr. 23, 1971, Ser. No. 136,828
Int. Cl. B60p *3/10*
U.S. Cl. 214—84 **9 Claims**



A trailer for transporting a boat, and a method utilizing the motive power of the boat to effect loading thereof on the trailer when the trailer is positioned in the body of water in which the boat is afloat. The trailer comprises a track structure having a dolly movable thereon. Catch structure engageable by a hook member on the bow of the boat is provided to secure the boat to the dolly. When the boat and dolly are interengaged, the motive power of the boat is activated to drive the dolly and the boat therewith longitudinally of the trailer. Guide structure is provided in conjunction with the catch structure to facilitate automatic interengagement of the hook member on the boat with the catch structure on the dolly. Latching means is provided between the dolly and the track structure for automatically locking the dolly adjacent one end of the trailer. Roller means are provided on the trailer for supporting the boat during the loading operation.

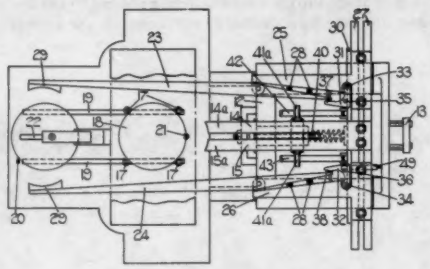
3,750,806

FEED MECHANISM FOR PRESSES

Leslie John Bartleet, Walsall, England, assignor to Unisoc Machine Tools Limited, Brownhills, Walsall, England

Filed Oct. 5, 1971, Ser. No. 186,722
Claims priority, application Great Britain, Oct. 7, 1970, 47,630/70
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 F **4 Claims**

A feed mechanism for feeding workpieces separately to a press comprising a base and a reciprocable feeding assembly. The feeding assembly embodies pusher means arranged to engage the lowermost workpiece in a stack of workpieces situated in a hopper on the base so that on reciprocation of said assembly, the pusher means pushes said lowermost workpiece forwardly to an intermediate station on the base. The feeding assembly also includes a pair of calipers adapted at their leading ends to move between open and closed positions so that in the closed position a workpiece previously deposited at said intermediate station will be gripped by the calipers and moved forwardly to the press in which it is to be deposited. Means are provided to open the calipers when the feeding assembly is at the end of its forward stroke in order that the workpiece carried by the calipers will be dropped into the press. The feeding assembly then returns to its rearward position so that the calipers can again pick up from said intermediate station another workpiece deposited there by said pusher means on the previous stroke of the feeding assembly.

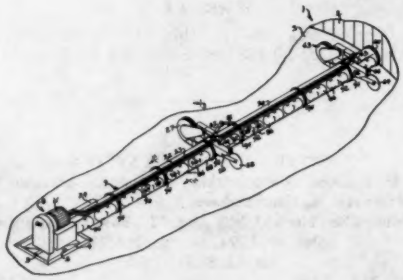


3,750,807

UNLOADER FOR STORAGE BINS

William J. Jackson, P.O. Box 266, Mendota, Ill.

Division of Ser. No. 77,263, Oct. 1, 1970, Pat. No. 3,647,094.
This application Nov. 8, 1971, Ser. No. 196,469
Int. Cl. B65g *65/46*
U.S. Cl. 214—152 **4 Claims**



The unloader uses a combination of a plurality of auger and casing units arranged end to end and separably coupled together in a circular bin which has a floor provided with a center outlet sump leading to any means to carry loose granular material from the sump. A power unit connected to the first auger, is mounted in the sump so it can be rotated on a vertical axis that is on the central axis of the bin. The power unit also includes a hydraulic pump. The casings have openings in one side with manually removable doors for them so that grain may be received by or blocked out of the augers. The first casing carries a tank for hydraulic fluid near the pump. Near the end of the casing remote from the sump, a drive and support unit carries the casing and is hydraulically driven. The second auger and casing unit is separably coupled to the first auger and casing unit and extends axially beyond it. It also has near its outer end a drive support unit essentially like the one on the first auger. The hydraulis drive coupling to the pump is such that when the first auger and casing unit is separated from the second auger and casing unit, this will limit the supply of fluid to the hydraulic motor of the first drive and support unit so it can be used to cause the first casing unit to travel around the sump and remove the material from the

center of the bin while the second unit remains buried in the pile of material in the outer portion of the bin. Unloading a bin by this method keeps the outward pressure on the entire circumference of the bin wall until center annular areas of the bin floor have been cleared and the outward pressure is lowered to a safe level.

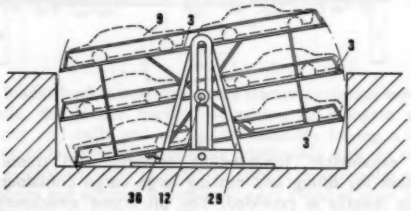
ERRATUM

For Class 214—11 see:
Patent No. 3,750,879

3,750,808
GARAGE FOR THE STORAGE OF VEHICLES

Kaspar Klaus, Schlachthofstrasse 46, 894 Memmingen/Bavaria, Germany

Division of Ser. No. 883,903, Dec. 10, 1969, Pat. No. 3,688,922. This application June 21, 1972, Ser. No. 264,843
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 ED **1 Claim**

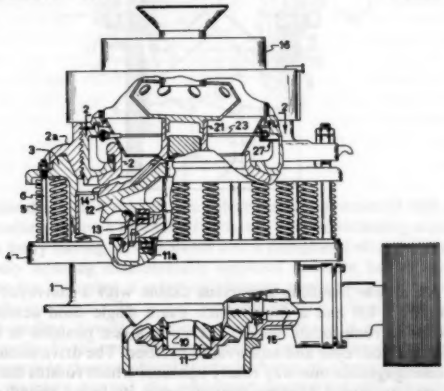


The garage comprises at least two tilting platforms, each capable of accommodating at least two vehicles end-to-end superposed in spaced relation and linked for tilting in unison to place one end of one platform and the other end of the other platform in communication with fixed run-in and run-off areas of the garage, in one tilted position, and vice versa in the other tilted position. Provision is also made for raising and lowering the interlinked platform structure where there are more than two platforms in a stack.

3,750,809
GYRATORY CRUSHER HAVING CRUSHER HEAD RESTRAINER

Ronald B. DeDiemar, Brown Deer, and Fred Curtis Archer, Whitefish Bay, both of Wis., assignors to Barber-Greene Company, Aurora, Ill.

Filed Dec. 27, 1971, Ser. No. 212,824
Int. Cl. B02c 2/04
U.S. Cl. 241—209 **2 Claims**

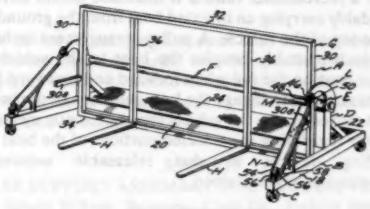


A gyratory type crusher having a crushing head rotatably mounted on an upright eccentric wherein the head gyrates in respect to a cooperating concave and thereby effects a crushing action when material is in the annular crushing chamber which is formed between the head and the concave. The head is rotatably mounted on a rotating eccentric which imparts a gyratory movement to the head relative to the concave. Means are provided for restraining the rotation of the head relative to the concave when the crushing chamber is empty or when the material is initially being introduced into the crushing chamber. The construction of the restrainer is such that the head is permitted to rotate backwards during the crushing operation and which backward rotation is due to the crushing action.

3,750,810
REFUSE CONTAINER HANDLING DEVICE

Gary L. Stanfill, Bakersfield, Calif., assignor to Midway Fishing Tool Company, Long Beach, Calif.

Filed Feb. 1, 1971, Ser. No. 111,554
Int. Cl. B65g 65/30
U.S. Cl. 214—314 **4 Claims**

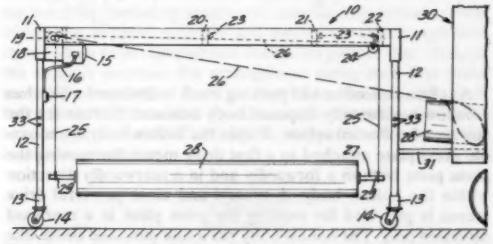


A movable, power operated, sanitation container handling device that includes pair of forks that may removably engage the container, and pivot the engaged container to any one of a number of elevated positions where the container may be steam cleaned, painted or other maintenance work performed thereon. The handling device is also capable of pivoting the container to a position where water or steam condensate that may have accumulated therein may drain from the container due to gravity.

3,750,811
CARPET UNLOADING AND TRANSPORTING ASSEMBLY

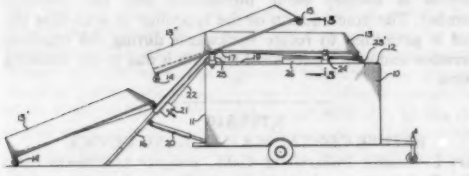
Lloyd E. Anderson, 3123 Upton Ave. North, Minneapolis, Minn.; Gilbert L. Alinder, 5312 Shoreview Ave. South, Minneapolis, Minn., and Donlin Thompson, Minneapolis, Minn.

Filed Sept. 4, 1970, Ser. No. 69,789
Int. Cl. B65g 67/24; B60p 3/00
U.S. Cl. 214—394 **5 Claims**



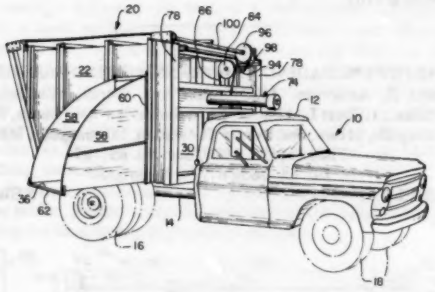
A carpet roll unloading and transporting assembly is provided comprising an elongated rectangular frame with legs extending downwardly from the corners and terminating in castors. An electrically driven drum is provided at one end of the assembly which winds and unwinds a pair of cable members to raise and lower rolls of carpeting for transporting or cutting off of portions for use. One of the cables is used in the assembly for unloading of rolls of carpeting from a truck.

3,750,812
BOAT LOADER FOR VEHICLE
Jack L. Evans, 10241 La Tuna Canyon Rd., Sun Valley, Calif.
Filed June 11, 1971, Ser. No. 152,287
Int. Cl. B60r 9/00
U.S. Cl. 214—450 **4 Claims**



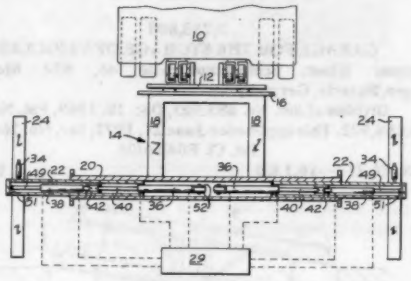
A mechanism for raising, positioning and securing a boat on the top of a recreational vehicle is disclosed herein having a rail for slidably carrying an inverted boat from the ground surface to the top of the vehicle. A pulley arrangement including a hand winch operably couples the boat to the vehicle for moving the boat on the rail while forward and rearward holding devices selectively engage the bow and stern of the boat as the boat is moved across the vehicle top. Automatic means are provided for registering the selected portions of the boat with the holding devices so that releasable securement therebetween can be maintained.

3,750,813
REFUSE TRUCK
Francis B. Fishburne, 24 Summit Dr., Asheville, N.C.
Filed Mar. 31, 1972, Ser. No. 239,924
Int. Cl. B60p 1/00
U.S. Cl. 214—518 **8 Claims**



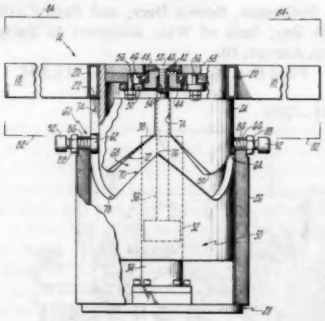
A refuse collection and packing truck is disclosed which has a hollow horizontally disposed body mounted thereon for the storage of collected refuse. Within the hollow body is a movable press plate attached to a first drive means for moving the press plate both in a forwardly and in a rearwardly direction within the hollow body. A second and more powerful drive means is provided for moving the press plate in a rearward direction only. The hollow body has a side mounted chute-like door arrangement for receiving refuse therein. The door arrangement is mechanically movable and transfers refuse to within the hollow body. The first drive means is then employed to move the press plate in a rearward direction in order to create a pile of loosely packed refuse. The second drive means is of greater power than the first drive means and is operative only to drive the press plate in a rearward direction for compressing the collected refuse against the rear gate of the hollow body.

3,750,814
EXPANDABLE TOP-HANDLING CONTAINER ATTACHMENT
Theodore Henry Allegri, Peoria, Ill.; Charles R. Chelin, Dallas, Oreg.; Dafydd W. Evans, Cleveland Heights, Ohio, and Norman D. Thompson, Dallas, Oreg., assignors to Towmotor Corporation, Cleveland, Ohio
Filed Oct. 1, 1971, Ser. No. 185,698
Int. Cl. B66f 9/18
U.S. Cl. 214—621 **12 Claims**



An expandable, top-handling container, lift frame attachment for lifting and moving large cargo containers of varying lengths is provided. The lift frame attachment is adapted for easy attachment to, or detachment from a carriage of a large-size fork-lift truck, and includes telescoping, transverse beam members that can be extended or retracted in length to fit intermixed containers of various lengths.

3,750,815
CONVEYOR SYSTEM LIFT ASSEMBLY
Robert Lee Haven, New Britain, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Dec. 3, 1971, Ser. No. 204,455
Int. Cl. B65g 7/00
U.S. Cl. 214—730 **14 Claims**



An article handling apparatus usable with a conveyor including a lift and a drive which has a single fluid actuated motor to reciprocate the lift, between a rest position in line with the conveyor and an elevated position. The drive includes a disengageable one-way rotary operator which rotates the lift a predetermined angular amount upon its being raised and lowered between an intermediate elevated positon and its extended position.

3,750,816

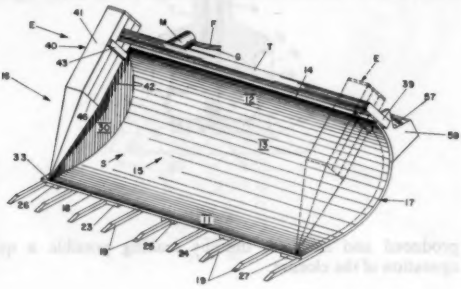
LOADER BUCKET WITH POSITIVE ENDWARD EJECTOR

Gene J. Becker, Walthill, Nebr.

Continuation of Ser. No. 865,463, Oct. 10, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 188,682

Int. Cl. E02f *3/00, 3/40*

U.S. Cl. 214—767 4 Claims



A loader bucket mountable on a tractor or similar movable vehicle, the loader bucket comprising an elongate scoop without end-walls and an ejector-assembly having a finite degree of longitudinally movable relationship with the scoop. The ejector-assembly includes an upright ejector-plate within the scoop and adapted to positively eject a load of grain, snow, or the like, from one of the open endward terminii of the scoop, the ejector-assembly being longitudinally motivatable through an annular chain connected to sprockets at the respective scoop terminii, at least one of the sprockets being actuatable hydraulically.

3,750,817

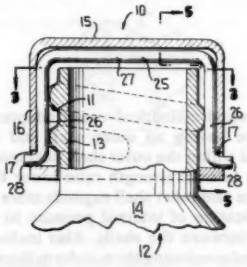
CHILDPROOF SAFETY CLOSURE

John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,217

Int. Cl. B65d *55/02*

U.S. Cl. 215—9 16 Claims



This disclosure relates to a safety closure associated with a container having a threaded finish, the closure including a closure body having an end panel and a peripheral skirt with inwardly opening diametrically opposed recesses having surfaces for camming a gripping element against the container finish automatically upon rotation of the closure in an unthreading direction. The gripping element is an inverted generally U-shaped member having ends exposed through apertures in the peripheral skirt which can be gripped to move the member toward the widemost portion of the recesses thereby releasing the gripping element to permit the unthreading of the closure from its associated container finish.

3,750,818

DEVICE FOR HANGING A SHOWER-BATH CURTAIN

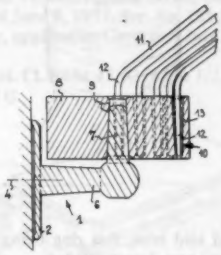
Georges Samuel Borstcher, 25, rue de Chazelles, Paris, France

Filed May 11, 1971, Ser. No. 142,297

Claims priority, application France, Mar. 18, 1971, 7117668

Int. Cl. A47f *5/08*

U.S. Cl. 211—95 3 Claims



The device for hanging a shower-bath curtain comprises an element having an upwardly tapered spindle for supporting a disk-plate which is moreover provided with housings for receiving rods on the free ends of which are fixed hooks for hanging said shower-bath curtain.

3,750,819

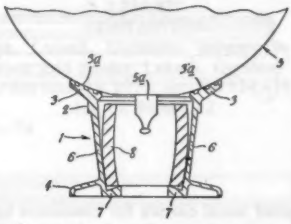
BASE SUPPORT ASSEMBLY FOR VACUUM VESSELS

John Edwin Wilson, Byeways, Cory Dr., Hutton Burses, near Brentwood, England

Filed Dec. 4, 1970, Ser. No. 95,198

Int. Cl. A47j *41/00*

U.S. Cl. 215—13 R 12 Claims



A base support assembly for bottles or fillers in vacuum vessels comprising a tubular axially extending support member of resilient material having its upper end shaped to form a seating to accommodate the base of the fillers, and a resilient reinforcing member housed in the support member, the reinforcing member extending axially and substantially symmetrically within the support member and having an axial length less than and an axial compression resistance greater than those of the support member, the arrangement being such that when an axial compression force is applied to the assembly such force is initially resisted by the support member and subsequently it is resisted both by the support member and the reinforcing member.

3,750,820

STOPPER

Maurice Labarre, 5 Avenue Pierre Grenier, 92 Boulogne S/S, France

Filed Apr. 26, 1971, Ser. No. 137,364

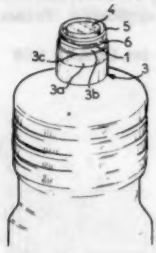
Claims priority, application France, Apr. 29, 1970, 7015785; Mar. 4, 1970, 7007411

Int. Cl. B65d *41/20*

U.S. Cl. 215—42 3 Claims

A stopper having a circular body surmounted by a substantially cylindrical boss having a diameter distinctly less than

that of said body, said stopper comprising a gripping ring accommodated within the annular space thus formed above said



body and around said boss, this ring being attached to the body by at least one non-detachable tab.

3,750,821

PILFER-PROOF CLOSURE

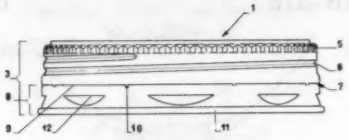
Claude Pierre Sourbet, 159, rue Blomet, Paris, and Rene Simon Devylder, 33-Saint Seurin sur l'Isle, both of France

Filed Apr. 28, 1972, Ser. No. 248,440

Claims priority, application France, Apr. 29, 1971, 7115396

Int. Cl. B65d *41/20*

U.S. Cl. 215—42 **7 Claims**



A pilfer-proof metal closure for containers having a wide mouth and an external screw thread, which includes a top portion covering the mouth of the container and a skirt portion defining a screw thread and having a rupture line to define a locking ring below the rupture line, the locking ring being provided with a plurality of resilient locking members which define an annular surface having a diameter less than the diameter of a locking ring on the container, with the locking members being adapted to be displaced from the container when the closure is set in position without changing the diameter of the locking ring.

3,750,822

CLOSURE FOR CONTAINERS, AND MORE PARTICULARLY FOR JARS, BOTTLES CANS AND THE LIKE

Werner Dubach, CH 8484 Weisslingen, Switzerland

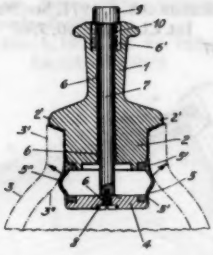
Filed Aug. 10, 1971, Ser. No. 170,540

Claims priority, application Switzerland, Aug. 13, 1970, 12177/70

Int. Cl. B65d *39/12*

U.S. Cl. 215—52 **3 Claims**

The invention provides a closure for containers, and more particularly for jars, bottles, can and the like. The closure includes a seal pressing against the inner wall of the container, in which the sealing pressure may be quickly and reliably



produced and relieved, thereby making possible a quick operation of the closure.

3,750,823

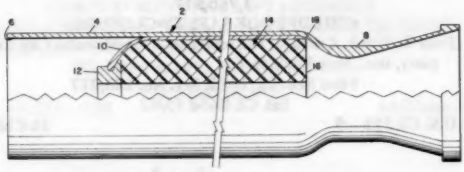
FILAMENT WOUND VESSEL AND METHOD OF MANUFACTURE

Richard P. Carter, and Frederick J. Policelli, both of Cumberland, Md., assignors to Hercules Incorporated, Wilmington, Del.

Filed Apr. 15, 1970, Ser. No. 28,819

Int. Cl. B65d *25/00*, *7/42*; B29c *27/10*

U.S. Cl. 220—3 **5 Claims**



A filament wound cylindrical vessel adapted to withstand internal pressure having an outer shell and an inner shell slidably disposed within the outer shell, said inner shell having a hoop strength to axial strength ratio lower than said outer shell whereby the said inner shell expands more than the outer shell upon application of internal pressure to form a strong frictional bond between the shells. Also includes method of forming shells and combining them to form the vessel.

3,750,824

ASHTRAY

George W. Walton, 8903 Devonshire Dr. at Farquhar Ln., Dallas, Tex.

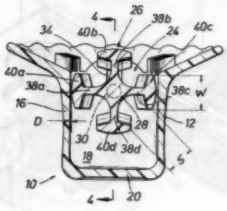
Filed Feb. 19, 1971, Ser. No. 116,979

Int. Cl. B65d *7/00*

U.S. Cl. 220—20.5 **6 Claims**

The ashtray disclosed has a receptacle with a bottom, side walls, and an opening in the top through which ashes,

cigarettes, and the like can pass into the receptacle. A roller is located in the opening and supported for rotation by the receptacle around an axis transverse the opening. The roller has a plurality of arms extending radially from the center portion of the roller. Each arm has a lobe attached to the end thereof, each lobe being wider than the arm to which it is attached so that each two adjacent arms with their associated lobes form a pocket having an opening between the lobes through which ashes, cigarettes, and the like can be deposited



in the pockets when the openings are facing upwardly and from which the ashes, cigarettes, and the like will fall into the receptacle when the roller is rotated. Each lobe has an outer arcuate surface that just clears the side walls of the receptacle and each lobe is wider than the distance between the lobes so that the roller will close the opening to the receptacle sufficiently at any position of the roller to keep ashes from being blown from the receptacle by the wind and to smother burning ashes deposited in the receptacle.

3,750,825

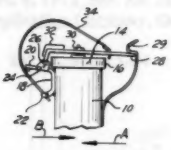
SELF-CLOSING CAP

Carle F. Bachle, Grosse Pointe Farms, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jan. 25, 1971, Ser. No. 109,500

Int. Cl. B65b *3/00*; **B65d** *43/16, 51/00*

U.S. Cl. 220—35 **5 Claims**



A cap for closing a filler tube or the like having a spring hinge mechanism designed to maintain the cap in an open position when the cap is on one side of an over-center position and to snap the cap closed when the cap is pivoted to the other side of the over-center position. Means are provided to reduce the likelihood that the cap will remain in the opened position when the machinery to which the filler tube is attached is put into operation. In one embodiment, this is achieved by mounting the tube and the cap so that vibrations of the tube upon operation of the machinery will shake the cap past the over-center position to cause it to snap shut. In another embodiment, a cover is provided which is movable away from the tube to permit access to the cap and to move against the cap when closed to move the cap past the over-center position and to snap the cap closed.

3,750,826

LATCHING APPARATUS FOR REMOVABLE ROOF OF TRANSPORT CONTAINERS, PARTICULARLY I. S. O. CONTAINERS

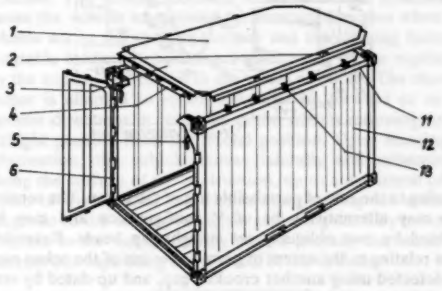
Hans Donath, Zwickau; Hans Peter Beier, Wilkau-Hassiau; Gottfried Otto, Gains-Dorf; Erich Franke, Zwickau; Gunter Kornetzky, Berlin; Eberhard Dietz, Niederlungwitz, and Klaus Wenzel, Zwickau, all of Germany, assignors to Ministerium Fur Verkehrswesen, Berlin, Germany

Filed June 9, 1971, Ser. No. 151,333

Claims priority, application Germany, July 27, 1970, WP 81 149 099

Int. Cl. B65d *45/02*; **E05c** *1/12*

U.S. Cl. 220—55 G **6 Claims**



A push rod extends along an edge of the framework of the roof. The rod has a plurality of wedge-like recesses. Corresponding projections are provided on or at the upper edge of the sidewall, for latching purposes.

3,750,827

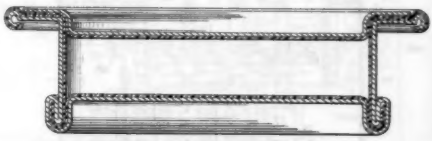
CONTAINERS

Helmut Wick, Lubeck, Germany, assignor to Nordischer Maschinenbau Rud Baader, Lubeck, Germany

Filed Mar. 15, 1971, Ser. No. 124,410

Int. Cl. B65d *7/42*

U.S. Cl. 220—74 **1 Claim**



The invention relates to a deep-drawn sterilisable metal container for foodstuffs. The container is of thin wall construction from metal foils, e.g. aluminium foil, coated at least on its inside with a thermo plastics layer. It is provided around its lower or base edge with an edge bead of double wall configuration which is folded or rolled either inwardly beneath the bottom wall or outwardly adjacent the side wall.

3,750,828

ACCESS-CONTROL EQUIPMENT AND ITEM DISPENSING SYSTEMS INCLUDING SUCH EQUIPMENT

Geoffrey Ernest Patrick Constable, Cheltenham, England, assignor to Smiths Industries Limited, London, England

Filed Aug. 24, 1970, Ser. No. 66,181

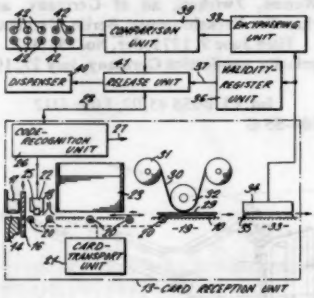
Claims priority, application Great Britain, Aug. 25, 1969, 42,263/69

Int. Cl. G06k *5/02*

U.S. Cl. 221—2 **22 Claims**

A money-dispensing system is operative to dispense money in response to a bank customer's credit card and keyed-entry

of his personal-identification number, only if this number accords with the customer's account number on the card and the card carries a magnetic recording having a crooked pattern of magnetization. The recording is detected by a magnetic head having a sensing gap of zigzag configuration, and contains data

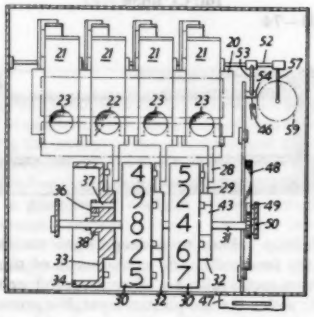


relating to the rate of permissible use of the token. The sensing gap may alternatively be of V configuration and may be defined by two obliquely set straight-gap heads. Recorded data relating to the extent of permissible use of the token may be detected using another crooked gap, and up-dated by erasure using a straight gap.

3,750,829
ARTICLE VENDING MACHINE HAVING BONUS DISPENSING MEANS

Henry George Frederick Jennings, 3 Helena Close, Hertfordshire, Hadley Wood, England

Filed July 24, 1972, Ser. No. 274,633
Int. Cl. G07f 11/44
U.S. Cl. 221—8 **7 Claims**

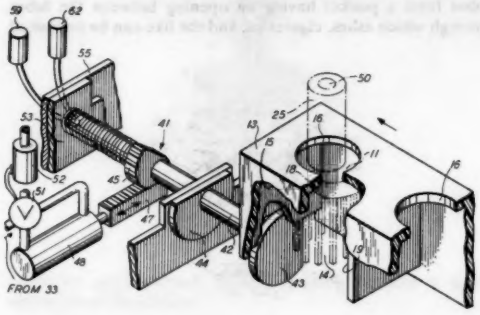


An article vending machine comprises several dispensing units each operable by a spring to dispense an article from a magazine, rotatable indicator wheels registrable at random in any one of several index positions, coin-freed drive means operable to energize the springs and rotate the indicator wheels, a dashpot arranged to delay operation of the dispensing units by the springs until after commencement of rotation of the indicator wheels, and a locking member movable into locking engagement with the wheels to lock them in random index position, at least one of the dispensing units being arranged to dispense an article in each operational cycle of the machine, and the operation of each remaining dispensing unit being blocked by an associated indicator wheel except when the wheel is registered in a selected index position.

3,750,830
DISPENSING CONTROL MECHANISM

William D. Bohannon, Jr., Rt. 3, Box 669, Graham, N.C.

Filed Sept. 13, 1971, Ser. No. 179,849
Int. Cl. G07f 11/48
U.S. Cl. 221—81 **2 Claims**

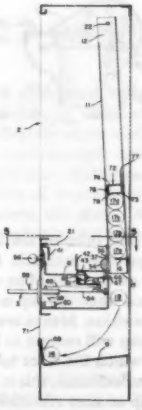


A plurality of components are selectively and sequentially discharged from a magazine by a dispensing control mechanism. The mechanism includes a piston arrangement upon which a tube is rigidly mounted within a piston. The piston, in turn, is slidably mounted within an air cylinder. One of a plurality of successive components to be ejected from the magazine is situated beneath the tube. Air under pressure is introduced into the cylinder and the air forces the piston downward so that the tube enters into an opening in the magazine and ejects the component therefrom. After ejecting the component from the magazine, the tube returns to its initial position and a cam controlled advance mechanism indexes the magazine to a position where a second component is situated beneath the tube.

3,750,831
ARTICLE DISPENSING MECHANISM FOR A VENDING MACHINE

George Souza, Hayward, and Clyde D. Pool, Oakland, both of Calif., assignors to Gain Manufacturing Corporation, Oakland, Calif.

Filed June 20, 1972, Ser. No. 264,632
Int. Cl. B65g 59/06
U.S. Cl. 221—188 **3 Claims**

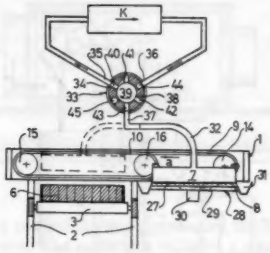


A mechanism for vending articles from a coin operated machine including an elongated article storage bin displaceable from a storage position to a discharging position, a splitter bar for holding the balance of the articles in the storage bin during the discharging of an article, and means for returning the bin to the storage position.

3,750,832
SOWING MACHINE FOR DISPENSING SEEDS UNTO SEED BEDS

Bengt Gustav Lennart Ovarnstrom, Baltargatan 27, Borlange, Sweden

Filed Feb. 12, 1971, Ser. No. 114,807
Claims priority, application Sweden, Feb. 16, 1970, 1967/70
Int. Cl. B65g 47/91; A01c 5/00
U.S. Cl. 221—211 3 Claims

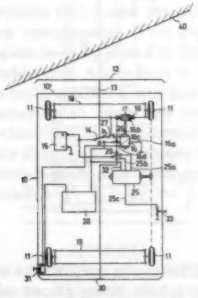


The present disclosure has to do with the construction of seed lifters which are utilized in a device used in the mechanical sowing of a number of seeds which are distributed to a predetermined number of sowing places with a predetermined number of seeds per sowing place. Each of the seed lifters includes a suction nozzle having a plurality of spaced openings and each of the openings are operatively connected alternately to the suction side and the pressure side of an air compressor. The diameter of the openings is considerably less than the size of the seed to be planted and around the mouth of each one of the openings is provided an essentially plane field bounded by and forming angles to the adjacent plane or curved surfaces which slope away from the field. The largest dimension of the plane fields does not essentially surpass the size of the seed type in question. Other specific structural relationships of the suction nozzle are set forth in the disclosure.

3,750,833
AUTOMATICALLY STEERED SELF-PROPELLED VEHICLE

Eberhard Kahl, Hemmingen, Germany, assignor to Bosch, Robert, GmbH, Stuttgart, Germany

Filed Oct. 8, 1971, Ser. No. 187,759
Claims priority, application Germany, Oct. 9, 1970, P 20 49 676.8
Int. Cl. B62d 5/04
U.S. Cl. 180—79.1 9 Claims

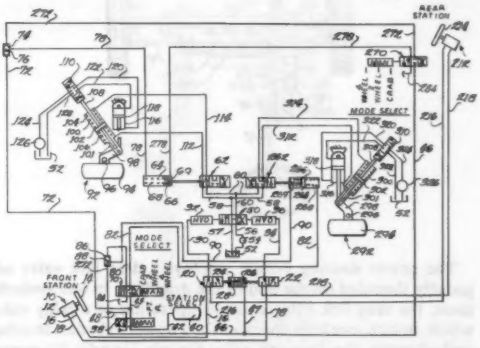


An automatically steered self-propelled vehicle for movement over the unobstructed portions of an area having obstructions includes a vehicle frame having wheels mounted thereon and a sensing rail mounted on the frame. The sensing rail is displaceable relative to the frame between a normally extended position and a retracted position upon being urged against an obstruction by the vehicle. A reversible driving motor is connected to the wheels for rotating the wheels in a forward and a reverse direction. A reversible steering motor is connected to the wheels for displacing the same between a normally straight and a sideward position oriented 90° from the straight position. A storage device for monitoring the distance travelled by the vehicle in the lateral direction is connected to the steering motor and to the driving motor for regulating the operation of these two motors. The steering motor is rotatable in one direction to cause the wheels to be displaced to the sideward position in response to the sensing rail achieving the retracted position and the steering motor is rotatable in the other direction to cause the wheels to return to the straight position in response to the sensing rail achieving the extended position. The driving motor is rotatable in one direction to cause the vehicle to move in the forward direction when the wheels are in the straight position and the steering motor is rotatable in the other direction in response to the regulation by the control device and to the wheel positions. The steering motor is adapted to rotate either in the forward or in the reverse directions in response to the wheels returning to the straight position from the lateral position. Upon meeting an obstruction, the vehicle moves laterally and substantially along the surface of the obstruction, up to a maximum of the width of the vehicle, the wheels straightening out either in response to the sensing rail again achieving the fully extended position or the vehicle having moved laterally the maximum amount corresponding to the width of the vehicle.

3,750,834
STEERING SYSTEM

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 52,940, July 7, 1970, abandoned. This application Dec. 22, 1971, Ser. No. 210,662
Int. Cl. B62d 5/06
U.S. Cl. 180—79.2 C 16 Claims



A steering system for a vehicle having a pair of steerable axles and an operator's station at each end. The system provides a means for steering the vehicle from either station and provides a means for selectively steering the vehicle in any one of three different modes.

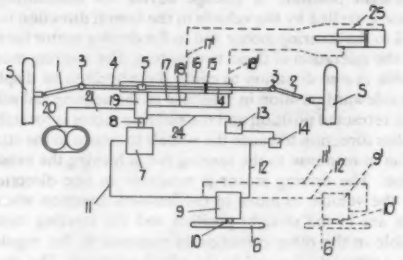
3,750,835
STEERING ARRANGEMENTS FOR MOTOR VEHICLES

Leslie Richard Jenvey, Reading, and Barry John Millard, Earley, near Reading, both of England, assignors to Adwest Engineering Limited, Berkshire, England

Filed Oct. 26, 1971, Ser. No. 192,503
Claims priority, application Great Britain, Oct. 28, 1970, 51,322/70
Int. Cl. B62d 5/06
U.S. Cl. 180—79.2 R 5 Claims

In a motor vehicle having steerable road wheels, a steering arrangement comprising a steering wheel or like control, a

first positive displacement pump motor operatively connected to the steering control for actuation thereby, a second positive displacement pump motor operatively connected to said steerable road wheels for imparting steering thereto, and



means connecting the output of each positive displacement pump motor with the input of the other and forming with the positive displacement pump motors a closed hydrostatic circuit.

3,750,836

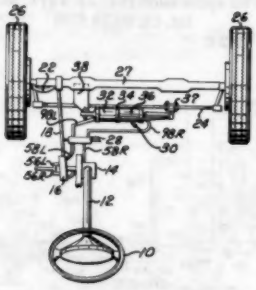
POWER STEERING SYSTEM

John J. Kristof, Marion, Ohio, assignor to Apsco Manufacturing Corporation and Air-O-Matic Power Steer Corporation, both of Cleveland, Ohio, part interest to each

Filed Nov. 15, 1971, Ser. No. 198,757

Int. Cl. B62d *5/08*

U.S. Cl. 180—79.2 R **10 Claims**



The power steering system employs a drag link valve adjustably threaded on the end of the drag link. In one embodiment, the drag link valve controls operation of a relay valve which, in turn, controls operation of a power cylinder. In other embodiments, the drag link valve directly controls the operation of the power cylinder. The disclosed valves each comprise a pair of valves selectively operable for right and left turning movements of the vehicle. Each valve includes a reciprocable valve stem supporting inlet and outlet face valves operable in sequence to open and close the inlet and outlet ports in a predetermined sequence.

3,750,837

EXPLOSIVE SEISMIC ENERGY SOURCE WITH QUICK RELEASE VALVE

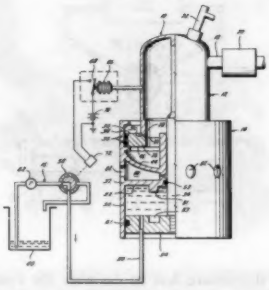
Charles D. Wood, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Feb. 8, 1972, Ser. No. 224,522

Int. Cl. G01v *1/02*; H04b *13/00*

U.S. Cl. 181—.5 H **8 Claims**

An apparatus for generating acoustical pulses in water by burning a fuel and air in a combustion chamber and releasing the explosive gases through an improved fast-acting valve to produce a seismic shock. A valve block opening and closing the combustion chamber with an actuator holding the valve block closed against the combustion chamber pressure by pressurized hydraulic fluid which when released allows the actuator to move away from the valve block and suddenly strike and move the valve seat block off of the combustion chamber outlet. The inertia of the actuator being larger than the valve



block to provide quick opening. The hydraulic control fluid being spaced from the combustion chamber to avoid heating and fouling. Providing metal to metal seal contact means between the valve seat block and the chamber outlet and with the actuator providing an improved ignition by inserting hot compressed air at a temperature of about 750°F into the chamber and thereafter spraying fuel therein thereby eliminating theneed for a spark or glow plug ignition source.

3,750,838

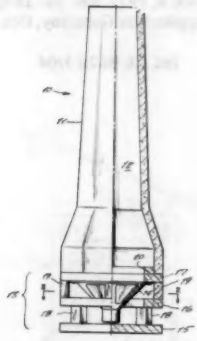
CONCRETE RESONANT CONE SPEAKER SYSTEM

John David Pyle, Jr., 311 N. 2nd East St., Soda Springs, Idaho

Filed Nov. 29, 1971, Ser. No. 202,821

Int. Cl. G10k *13/00*; H04r *1/28*

U.S. Cl. 181—31 B **1 Claim**



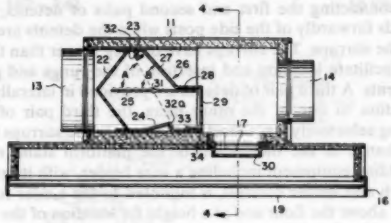
A speaker system for use in conjunction with a high fidelity system, the speaker system being placed within a room, and including a vertically upstanding truncated cone of hollow character and which tapers upwardly toward a top opening, the lower end of the concrete cone being mounted upon a wood base that supports a speaker, the wood base including a top ring, intermediate ring and flat bottom piece surrounding the speaker, the top ring, intermediate ring and bottom piece being spaced apart by means of the support separators.

3,750,839

AIR DISTRIBUTION APPARATUS

John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Nov. 1, 1971, Ser. No. 194,281
Int. Cl. F24f 13/10; F16l 55/02
U.S. Cl. 181—50 13 Claims



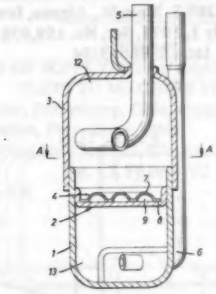
Apparatus for controlling and distributing the flow of air to one or more zones. The apparatus includes a sound-dampening baffle to aid in delivering air with a minimum of perceptible noise.

3,750,840

SOUND ABSORBER FOR COMPRESSORS

Bent Melchior Karlsen Holme, Humbaek Pr. Skovby, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 859,545, Sept. 19, 1969. This application Sept. 27, 1971, Ser. No. 184,301
Claims priority, application Germany, Oct. 8, 1968, P 18 01 721.5
Int. Cl. F01n 1/08; F04b 21/00
U.S. Cl. 181—57 1 Claim



The invention relates to a sound absorber assembly for encased refrigeration compressors. Two cup-shaped members are slidably and telescopically joined to form a main chamber of selectively variable size. A partition in one of the cup elements divides the main chamber into two sub-chambers and the partition is movable to allow any desired volume ratio between the sub-chambers to be selected. A throttle passage having the opposite ends thereof in respective fluid communication with the sub-chambers is incorporated into or connected to the partition.

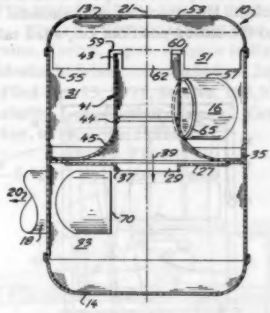
3,750,841

MUFFLING DEVICE FOR GAS DISCHARGE

Geoffrey Phillip Brown, 212-1286 W. 14th, Vancouver, British Columbia, Canada

Filed Oct. 30, 1972, Ser. No. 301,835
Int. Cl. F01n
U.S. Cl. 181—58 10 Claims

Gas discharge muffling device having generally cylindrical body with closed ends, inlet pipe directing gas tangentially into body and outlet pipe exhausting gas from device. Baffle plate divides body into inlet and outlet chambers which communicate with inlet and outlet pipes respectively, conduit connecting inlet and outlet chambers. Splitter plate in inlet chamber restricts rotation of gas in inlet chamber induced by tangential entry of gas. Splitter plate is essentially flat sheet disposed in diametrical plane of cylindrical body and parallel to direction of gas entry.

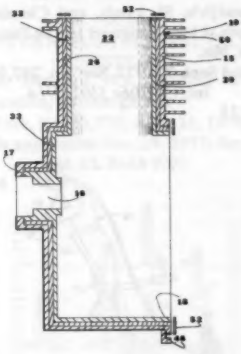


3,750,842

HOUSING FOR AN AIR COOLED ENGINE

Horace McCaffrey, Jr., 9920 West Edgerton Ave., Milwaukee, Wis.

Continuation-in-part of Ser. No. 21,149, March 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 878,304, Nov. 20, 1969, Pat. No. 3,545,565. This application Dec. 4, 1970, Ser. No. 95,263
Int. Cl. G10k 11/00
U.S. Cl. 181—33 R 11 Claims



An air cooled internal combustion engine housing having an inner wall, an outer wall spaced from said inner wall to form a cavity therebetween, and a high density metallic material substantially completely filling the cavity between the two walls. Cooling fins are provided on the outer wall to dissipate heat from the engine and a hood having a laminated layer of high density material and an outer protective layer thereon surrounds a portion of the housing.

3,750,843

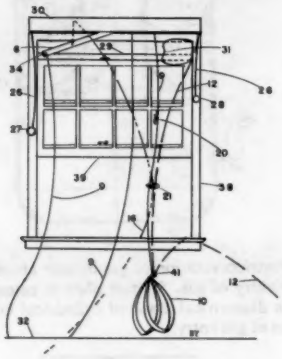
FIRE ESCAPES

John Raymond Wilhelm, 11605 Split Rail Ct., Rockville, Md.

Filed Nov. 26, 1971, Ser. No. 202,159
Int. Cl. A62b 1/06
U.S. Cl. 182—72 4 Claims

A fire escape which is inexpensively constructed, esthetically acceptable for an interior installation above an upper

floor window, rapidly deployable, and easily operated. It consists of a rope with two leg loops which is loosely wrapped around a small circular spool whose axis is perpendicular to the wall above the window. The descent is controlled by varying the friction of the rope on the spool surface using a gravity actuated jam cleat. Unsupported, gravitational forces rotate the jam cleat to the closed position, i.e., a fail safe mode. The



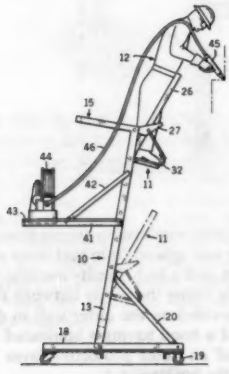
descent is initiated and controlled by the escapee with a lanyard which counteracts the gravitational forces. The device features a hook appropriately placed on the rope to assist in holding a blanket during descent as a measure of protection against flame from lower levels. It also includes a diverting rope which allows a ground observer to alter the downward path if necessary to avoid such flames.

3,750,844

LADDER ASSEMBLY

Anthony K. Pandjiris, St. Louis, and Cleveland N. Cooper, Kirkwood, both of Mo., assignors to The Pandjiris Weldment Co., St. Louis, Mo.

Filed Sept. 7, 1972, Ser. No. 287,029
Int. Cl. E06c *5/02, 7/14*
U.S. Cl. 182—121 **13 Claims**



A ladder assembly in which the rungs are selectively and detachably retained in transversely aligned pairs of socket means carried by laterally spaced side posts, and a platform unit is mounted on the side posts at selectively predetermined elevations. The platform unit includes two pair of detents selectively and detachably seating in two pair of longitudinally spaced socket means, after removal of their associated rungs, to provide a force couple supporting the platform unit on the side posts. Rungs, otherwise located in socket means above the detents, are selectively removed for unobstructed access to the platform unit. Preferably, the socket means are top-open, substantially U-shaped stirrups mounted on the inside of the side posts, and the platform unit is located between the side posts, the platform detents extending laterally outward for selective insertion into the top-open stirrups. The stand member of the platform unit extends forwardly from a line interconnecting the first and second pairs of detents, and extends forwardly of the side posts when the detents are located in the stirrups. The stirrups have one leg longer than the other to facilitate location and insertion of the rungs and platform detents. A third pair of detents are provided in laterally spaced relation to one of the other pairs, the third pair of detents being selectively and detachably seated in the stirrups to effect a change in the inclination of the platform stand member. Welding equipment including a wire feeder, with its attendant torch and feeder conduit, is mounted to the ladder for elevation above the floor and at a height for location of the torch at a working level determined by the highest position of the platform unit.

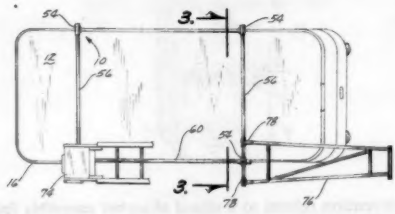
The method of adjusting a platform unit on a ladder which includes the steps of removing the rungs from the socket means at which the platform unit is to be located, raising the platform unit and seating the detents in the vacated socket means to locate the stand member between the side posts, and removing other rungs from their associated socket means above those socket means in which the platform detents are seated, to provide unobstructed access to the stand member of the platform unit.

3,750,845

SUPPORT MOUNTING ASSEMBLY

Eugene W. Faulstich, 209 S. Main St., Algona, Iowa

Filed July 1, 1971, Ser. No. 158,878
Int. Cl. E06c *5/34*
U.S. Cl. 182—127 **4 Claims**

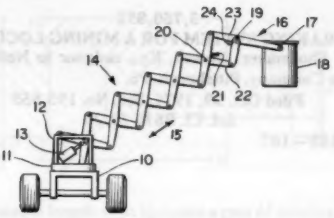


A support mounting assembly for a truck to support an aerial tower, the support including a combination of two brackets one of which has an L-shaped portion and a threaded sleeve element integrally connected to one leg for receiving a threaded pipe or the threaded end of the leg of the other bracket which is L-shaped and includes a sleeve as the other leg of the L. Oppositely disposed L-shaped brackets may receive horizontally arranged conventonal pipe to provide a support structure. Reinforcement members may be connected to the vertical leg of the L-shaped bracket as a pair of threaded bosses are provided. Conventonal extension pipe may be inserted between the vertical leg of the L-shaped bracket and the threaded sleeve of the first bracket to give the desired height to the support structure. The L-shaped portion of the first bracket is adapted to be connected to any surface including the rain gutter around the top of a vehicle or the corners of the cabinets on a utility-type truck or the flat bed of a truck.

3,750,846
LAZY TONG TYPE BOOM STRUCTURE WITH EXTENSION AID

Thomas C. Huxley, III, Camari 110, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

Continuation of Ser. No. 57,477, July 23, 1970. This application Dec. 1, 1971, Ser. No. 203,872
Int. Cl. E04g 1/22, 3/10
U.S. Cl. 182—141 10 Claims

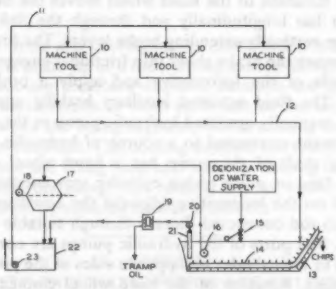


A boom structure including a plurality of crossed links having their centers and ends pivotally connected to define a lazy tong structure includes a compression spring positioned to exert a force between the next to last and last links making up the lazy tong structure when the structure is in collapsed position to aid extension of the structure. The spring has one end secured close to the central point of the next to last link and its other end is free. The opposing last link portion includes a guiding cone for receiving the free end of the compression spring when the structure is collapsed. When the lazy tong structure is extended, the compression spring effects initial extension of the next to last and last links while the initial crossed links at the base of the boom are separated by the driving force for extending the structure. A smooth unfolding of the respective links can thus be realized.

3,750,847
METHOD OF SUPPLYING AN AQUEOUS CUTTING FLUID TO MACHINE TOOLS

Clyde A. Sluhan, Perrysburg, Ohio, assignor to Master Chemical Corporation, Perrysburg, Ohio

Filed May 3, 1972, Ser. No. 249,930
Int. Cl. F01m 9/02
U.S. Cl. 184—1 E 1 Claim

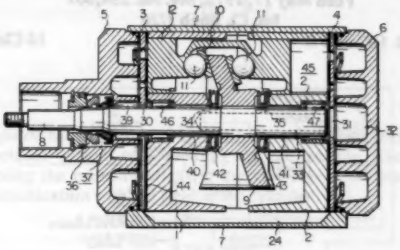


An aqueous cutting or grinding fluid is fed to at least one machine tool having at least one cutting tool, and the used fluid is collected. Solids are removed from the used fluid to produce a supply of clarified fluid. A pH of 8 to 9.5 is maintained in the clarified fluid by addition of a base. Deionized water is supplied to the system to replace water losses, and a water-miscible lubricant is supplied to maintain a lubricant concentration in the system from 1 to 25 percent. Tramp oil is removed from the clarified fluid by passing a portion of the clarified fluid through a centrifuge, to maintain a tramp oil content of not more than 2 percent in the clarified fluid, and the resulting clarified fluid is reused.

3,750,848
APPARATUS FOR LUBRICATING A ROTARY SWASH PLATE TYPE COMPRESSOR

Shozo Nakayama, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda, Jidoshokki Seisakusho, Aichi-ken, Japan

Filed Oct. 13, 1971, Ser. No. 188,911
Claims priority, application Japan, Oct. 15, 1970, 45/102605; Apr. 6, 1971, 46/25594
Int. Cl. F16n 13/20
U.S. Cl. 184—6.16 16 Claims

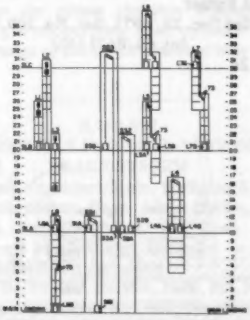


An apparatus for lubricating a rotary swash plate type compressor characterized by an improved and simplified internal arrangement for distributing the lubricating oil separated from the refrigerant being returned continuously from a refrigerating circuit, into the slidably moving sections and elements of the compressor to give a smooth motion in addition to preventing the burning phenomenon of the sliding sections of the compressor, elimination of the oil pump, and the entire compressor-size being extremely compact.

3,750,849
DUPLEX COUNTERWEIGHTLESS SHUTTLE ELEVATOR SYSTEM

Harry Berkovitz, Glenrock, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 30,375, April 21, 1970, Pat. No. 3,651,893. This application Dec. 29, 1971, Ser. No. 213,587
Int. Cl. B66b 9/00
U.S. Cl. 187—16 4 Claims



Elevator cars suspended from opposite ends of a traction driven hoist cable counterbalance each other and provide ideal spacing between cars serving two terminal floors such as a main floor and a sky lobby. A leveling device on one or both cars provides for adjustment of the position of the associated car relative to the hoist cable to accommodate for cable stretch and settling of the building so that each car can be brought into exact registry with the adjacent landing. The cars can be arranged to stop at pairs of intermediate floors located equal distances from the two terminal floors and can be

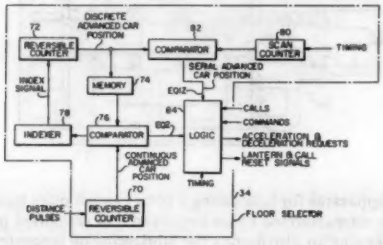
further arranged to distribute load in opposite directions from a third terminal located halfway between the first and second terminals. The counterbalanced cars can be combined with a second elevator system, either a conventional system or a counterbalanced system, for sky lobby operation with the counterbalanced car system providing either the shuttle service, the local service or both.

3,750,850

FLOOR SELECTOR FOR AN ELEVATOR CAR

Charles L. Winkler, Pittsburgh, Pa., and Andre Wavre, Bevaix, Switzerland, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1972, Ser. No. 254,007
Int. Cl. B66b 1/20
U.S. Cl. 187—29 R **16 Claims**



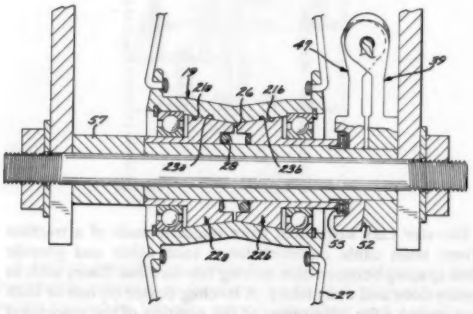
A floor selector adaptable for use in an elevator system which uses binary counters and comparators to provide a continuous, a discrete, and a serial advanced car position signal. The continuous and discrete advanced car position signals are used to generate an equality signal when the car must initiate deceleration in order to stop at a floor with a predetermined deceleration pattern, and the serial advanced car position signal is used to determine a coincidence of a call for service for that floor. A coincidence registered by the time the equality signal is generated initiates a request for deceleration.

3,750,851

POWER MECHANISM

Clarence E. Ruther, Norwalk, and Patrick D. Sullivan, 8321 Oakmont, Buena Park, both of Calif., assignors to said Sullivan, by said Ruther

Filed Dec. 20, 1971, Ser. No. 209,816
Int. Cl. B62l 5/02
U.S. Cl. 188—26 **8 Claims**



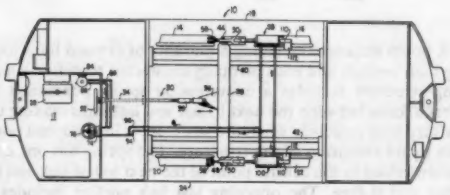
The present invention is directed to a power mechanism that may be used for either absorbing or transmitting power; the invention being explained in terms of a motorcycle brake. It discloses a wheel structure in which the wheel-hub acts as a brake-drum, and a pair of separatable conical members is positioned internally of the hub, and acts as a continuous peripheral brake-lining.

3,750,852

DUAL BRAKING SYSTEM FOR A MINING LOCOMOTIVE

Leon H. Shoemaker, Russell, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Oct. 29, 1971, Ser. No. 193,655
Int. Cl. B61h 13/20
U.S. Cl. 188—107 **9 Claims**



The braking system includes mechanically actuated apparatus to move the brake shoes into frictional engagement with the locomotive wheels. The mechanically actuated apparatus has a hand wheel suitably mounted in the operator's compartment. The hand wheel is connected to one end of a rotatable screw device. The other end of the rotatable screw device is threadedly secured in a threaded bore of a bracket member. The bracket member is secured to a transversely extending equalizer bar. The equalizer bar is connected by a pair of link members to vertically extending brake levers through a lost motion connection. The vertically extending brake levers are pivotally secured to wheel brake assemblies that include a pair of depending hanger levers to which brake shoes are pivotally connected. The brake assembly includes a wear adjustment device to adjust the position of the brake shoes due to wear. Rotation of the hand wheel moves the bracket and equalizer bar longitudinally and through the link members pivots the vertically extending brake levers. The brake levers, in turn, move the brake shoes into frictional engagement with the wheels of the locomotive and apply a braking force thereto. The fluid actuated auxiliary braking apparatus includes a manually operated hydraulic pump in the operator's compartment connected to a source of hydraulic fluid. The actuating shaft of the pump has a hand wheel connected thereto. One or more piston cylinder servomechanisms are mounted on the locomotive adjacent the equalizer bar with the piston rod connected thereto through suitable overtravel linkages. The ports of the hydraulic pumps are connected by conduits to the cylinder on opposite sides of the piston within the cylinder. Rotation of the hand wheel connected to the hydraulic pump in one direction supplies fluid to the piston cylinder assembly to extend the piston rod and move the equalizer bar. Movement of the equalizer bar moves the brake shoes into frictional engagement with the locomotive wheels through the same linkages associated with the mechanically actuated apparatus. The rotation of the hand wheel connected to the pump in the opposite direction moves the brake shoes out of frictional engagement with the locomotive wheels. The amount of frictional force exerted by the brake shoes when actuated by the fluid actuated auxiliary braking system may be easily, accurately and positively controlled.

3,750,853

LOAD TRANSMITTING STRUTS

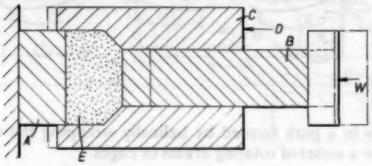
Glyn Phillip Reginald Farr, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Aug. 23, 1971, Ser. No. 173,953

Claims priority, application Great Britain, Aug. 21, 1970, 40,422/70; Mar. 17, 1971, 7,071/71

Int. Cl. F16d 65/54

U.S. Cl. 188—196 R 22 Claims



An adjustable length strut includes a pair of relatively movable members defining a pair of load bearing faces which in part define a closed chamber containing fluent material, the fluent material spacing the faces and means is provided movable relative to the faces to vary the configuration of the chamber and therefore of the fluent material to vary the relative position of the faces. The members and movable means may be variously pistons, cylinders or sleeves slidable on pistons or in cylinders. Such a strut has particular, but not exclusive, application to vehicle wheel brakes as the adjustable element of a wear compensating auto-adjustor or a lock actuator.

3,750,854

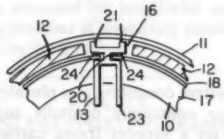
BRAKE SHOE COOLING MEANS

Robert A. Gramley, R.D. No. 2 , Franklin, Pa.

Filed June 30, 1971, Ser. No. 158,423

Int. Cl. F16d 65/82

U.S. Cl. 188—264 R 5 Claims



A brake drum and cooling means combination is disclosed. The brake is made up of a shoe having spaced lining segments with the cooling members disposed between the lining segments. A slot extends in from each side of the shoe in the space between the lining segments and a cooling member is disposed in each slot. The cooling member has two fins on the side adjacent the lining members and two cooling fins on the side opposite the lining. The cooling fins are made of a high heat conductivity material such as aluminum.

3,750,855

HYDRO-PNEUMATIC PISTON AND CYLINDER DAMPING DEVICE

Carl Ullrich Peddinghaus, Obere Lichtenplatzer Strasse 276, 56 Wuppertal-Barmen, Germany

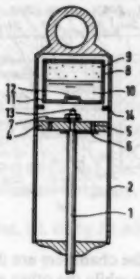
Filed Dec. 2, 1971, Ser. No. 204,034

Claims priority, application Germany, Mar. 12, 1971, P 21 11 967.5

Int. Cl. F16f 9/06

U.S. Cl. 188—269 11 Claims

A piston and cylinder damping device wherein the cylinder is provided with a compensating chamber for the fluid displaced by the piston rod, wherein the compensating chamber takes the form of a cartridge which contains a pressurised gas and which has at one end a sealing disc, the device being also provided with a punch which is arranged to pierce the sealing disc when in use the cartridge is assembled to the cylinder and the piston is first displaced by relative inward movement of the associated piston rod, piercing of the sealing disc then enabling the pressurised gas in the cartridge to be placed in communication with the fluid in the cylinder.



3,750,856

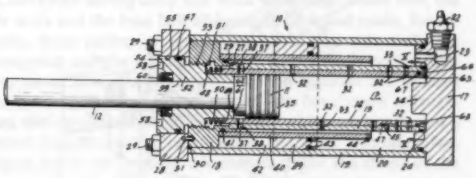
ADJUSTABLE, PRESSURE COMPENSATING SHOCK ABSORBER/BUFFER

Grant F. Kenworthy, 1688 Chestnut, Des Plaines, Ill.

Filed Dec. 9, 1971, Ser. No. 206,429

Int. Cl. F16f 9/50

U.S. Cl. 188—287 7 Claims



A rectilinear piston and cylinder shock absorber has an inner cylinder sleeve responsive to overload against the piston and/or excessive piston velocity to throttle hydraulic fluid displacement from the piston chamber through a metering system including a cooperating fixed cylinder member. The kinetic energy range of the shock absorber may be readily adjusted.

3,750,857

PISTON ASSEMBLY FOR DUAL-NETWORK DISK-BRAKE SYSTEM

Helmut Marschall, Frankfurt/Main; Wolfgang Kammermayer, Frankfurt/Fechenheim; Hans Albert Beller, Bad Wilbel; Heinz Hahm, Frankfurt/Main, and Juan Belart, Walldorf/Hessen, all of Germany, assignors to Alfred Teves GmbH, Frankfurt/Main, Germany

Division of Ser. No. 99,407, Dec. 18, 1970, Pat. No. 3,669,226, which is a division of Ser. No. 831,400, June 9, 1969, Pat. No. 3,601,233, which is a division of Ser. No. 681,330, Nov. 8, 1967, Pat. No. 3,490,565. This application Feb. 18, 1972, Ser. No. 227,346

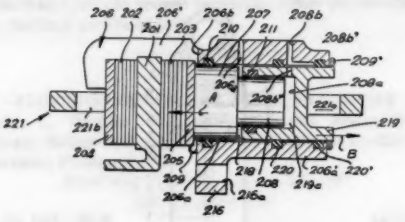
Claims priority, application Germany, Nov. 16, 1966, T 32523; Dec. 16, 1966, T 32765; Dec. 16, 1966, T 32766; Dec. 16, 1966, T 32768; Dec. 16, 1966, T 32769; Dec. 17, 1966, T 32784; Dec. 17, 1966, T 32785; Feb. 7, 1967, T 33161

Int. Cl. B60t 11/20

U.S. Cl. 188—345 10 Claims

A vehicle-brake system having a tandem or twin master cylinder for delivering the brake fluid to independent trans-

mission networks each connected with one compartment of a disk brake whose actuating cylinder is located on one side of the brake disk and receives at least one piston defining its working compart ents or chambers therein. A pair of pistons



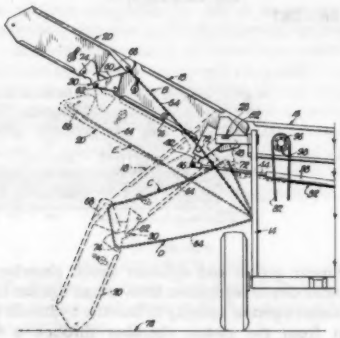
are provided, so that the chambers are disposed to one side of the direct-acting piston while the other piston applies pressure to the brake housing or to a force-transmission frame extending around the disk.

3,750,858

LOADING CONVEYOR FOR HARVESTERS

Allen A. White, Peabody, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Oct. 14, 1971, Ser. No. 189,204
Int. Cl. B65g *21/12*
U.S. Cl. 198—115 15 Claims



A potato harvester has a vertically swingable, potato-unloading conveyor segment, extensible laterally therefrom, and provided with a pair of articulated sections adapted to not only discharge the potatoes gently into the bottom of a container, but to be gradually raised as the potatoes pile up and are heaped above the top of the container. A special, combination hip joint and power lift connection for the sectional conveyor segment causes it to rise automatically so as to prevent damage thereto when accidentally bumped by the potato-receiving container of a trailer, truck or the like. The effective width of the harvester may be reduced for storage and over-the-road travel by tucking or folding the outer section in, under and between the harvester and the inner section.

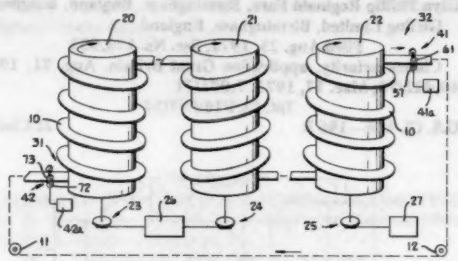
3,750,859

HELICAL PATH CONVEYOR

Rulo Wayne Smith, Auburn, Ind., assignor to Rieke Corporation, Auburn, Ind.

Continuation-in-part of Ser. No. 85,150, Oct. 29, 1970, abandoned. This application Oct. 26, 1971, Ser. No. 192,174
Int. Cl. B65g *15/28, 23/04*
U.S. Cl. 198—136 4 Claims

Disclosed is a power driven booster assembly and a power driven conveyor belt tensioner assembly which assist in driving with minimum wear, a travelling conveyor belt which



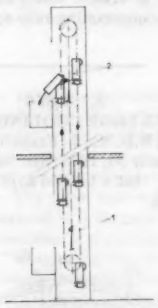
moves in a path formed by helically wrapping the conveyor belt on a series of rotating drums or cages.

3,750,860

AUTOMATIC DISCHARGE TRAYS

Felicien Jaffre, S.A.M.A. Zone Industrielle de Keryado, Lorient, France

Filed July 2, 1971, Ser. No. 159,283
Claims priority, application France, July 3, 1970, 7024904
Int. Cl. B65g *17/12*
U.S. Cl. 198—144 7 Claims



A conveyor system consisting of a plurality of material carrying sheaths or containers pivotally supported about a horizontal axis on a support frame carried by two chains operatively connected to a power source. The material carrying sheaths are open at the bottom and are caused to pivot outwardly away from the support frame by a cam carried by the sheath which engages an arrester actuated by a station selecting pushbutton on the frame, whereby the load is discharged from the open bottom of the sheath as it is pivoted away from the support frame.

3,750,861

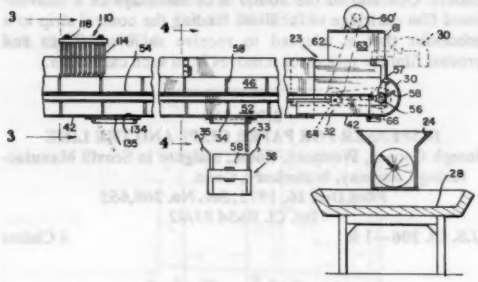
SELECTIVE DISCHARGE FEED CONVEYOR

Robert G. Holtsclaw, and Jerrell D. Holtsclaw, both of Switz City, Ind.

Filed Dec. 13, 1971, Ser. No. 207,201
Int. Cl. B65g *15/04*
U.S. Cl. 198—159 15 Claims

A single-chain feed conveyor having a series of flights on a central bottom chain, which normally discharges at its forward end, is modified to provide discharge at intermediate points. A shroud at the forward discharge end has an open condition in which it permits normal forward-end discharge, and has a closed condition in which it forms a return bend channel to guide the conveyed material to the return trough containing the return stretch of the conveyor chain. The returning flights then convey the material along the return trough to an opening in any desired point therein. Leveling means over the for-

ward-conveying trough levels any large clumps of conveyed material, such as silage, to prevent overloading the return bend shroud, and such shroud is shaped with wide clearance at



the top and close clearance at the bottom with respect to the conveyor flights as they swing about the sprocket at the discharge end.

3,750,862

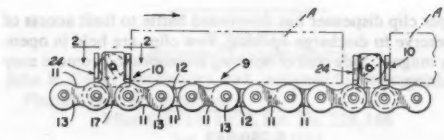
FEED DOG LINK ASSEMBLY FOR SPROCKET CHAIN

Leonard E. Knipe, Longview, Tex., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Apr. 7, 1971, Ser. No. 132,034

Int. Cl. B65g *17/00*

U.S. Cl. 198—189 **5 Claims**



A feed dog link assembly for a sprocket chain including a feed dog member mounted for lengthwise movement of the link. The feed dog member is selectively positioned by eccentric means carried by the link.

3,750,863

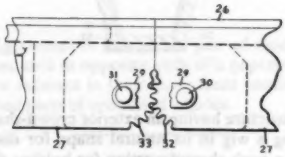
SEGMENTAL SELF-SUPPORTING BEAMS CONVEYOR AND COMBINATION BED AND CONVEYOR

Karol T. Dyczynski, Erie, Pa., assignor to Hanley Development Corporation, Erie, Pa.

Filed Mar. 22, 1972, Ser. No. 237,119

Int. Cl. A61g *7/08*; B65g *15/30*

U.S. Cl. 198—189 **6 Claims**



A conveyor and a conveyor in combination with an invalid bed. The conveyor is made up of a continuous belt supported on two spaced pulleys. The pulleys have an outside periphery in the shape of a polygon, rotatable about a central axis and having flattened surfaces around the periphery, each flattened surface being equal in length to one side of the polygon. The belt is made up of hinged sections, hinged together by links. Each link is pivoted at its ends to the ends of two adjacent sections and each section has teeth arranged in a circle having a center at the pivot point of the links. The teeth mesh with each other as the sections pass around the pulleys so that the sections are held in positive alignment with each other. The links are arranged to form a continuous belt that passes around the pulleys and each section is equal to one side of the polygonal surfaces of the pulleys. Each section has a pad on it that forms a bed mattress to support an invalid and the pulleys are supported on the head and foot of the bed.

3,750,864

MATERIAL CONVEYORS

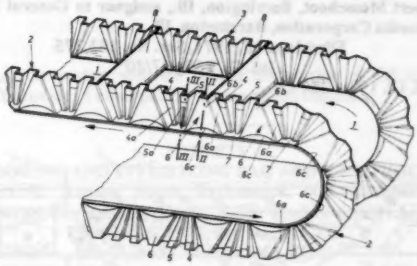
Gunther Nolte, 111-115 Obere Riedstrasse, Mannheim, Germany

Filed Jan. 4, 1972, Ser. No. 215,323

Claims priority, application Germany, Jan. 7, 1971, P 21 00 364.5

Int. Cl. B65g *15.40*

U.S. Cl. 198—201 **5 Claims**



Conveyors having deep side walls secured to a base belt, the side walls and the base belt all being flexible and made, for example, from rubber or plastic materials. The side walls are corrugated and the corrugations are substantially rectangular in cross-section. Furthermore, the corrugations are divided into a set comprising, for example, two fan-shaped corrugations that are joined together and onto which are connected a further interconnecting corrugation, the latter also being fan-shaped but in an opposite orientation to the fan shape of the first-mentioned corrugations. The interconnecting corrugation has at least an approximately constant height (referring to its cross-section) on its outer surface up to an edge strip that connects each side wall to the base belt and also has a base merging curvilinearly to the outside. The curvature of this base flattens out to zero with respect to tht edge strip from its outer to the inner edge.

3,750,865

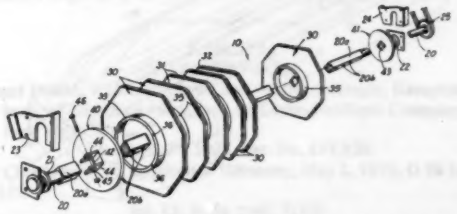
CROP DIRECTING DISC AND/OR ASSEMBLY

Larry D. Harrell, Albany, Ga., assignor to Lilliston Corporation, Albany, Ga.

Filed June 3, 1971, Ser. No. 149,604

Int. Cl. B65g *29/00*

U.S. Cl. 198—211 **1 Claim**



A crop directing disc and/or assembly for use in transferring crops along a predetermined path in a harvesting operation. A

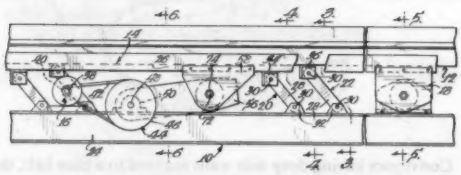
crop directing assembly is constructed of a plurality of crop directing discs supported in axially spaced relationship and coaxially aligned relative to each other. Each of the crop directing discs are constructed of an integral piece of synthetic material in the form of a multi-sided figure, with the intersecting points between adjacent sides of the disc rounded to present a substantially smooth surface detailed for contacting crops in a transferring operation. The crop directing discs are provided with collar means extending axially outward from opposite surfaces of the discs, with alignment means in the form of a plurality of axially extendint male lugs and a plurality of axially formed female openings detailed for effecting an angular alignment between adjacent discs. The crop directing discs are supported in an assembled relationship by a rotatable support shaft detailed for effecting a driving of the discs in response to rotary movement of the support shaft.

3,750,866

VIBRATORY CONVEYOR WITH COUNTERPOISE

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed June 15, 1971, Ser. No. 153,375
Int. Cl. B65g *27/30*
U.S. Cl. 198—220 CB **5 Claims**



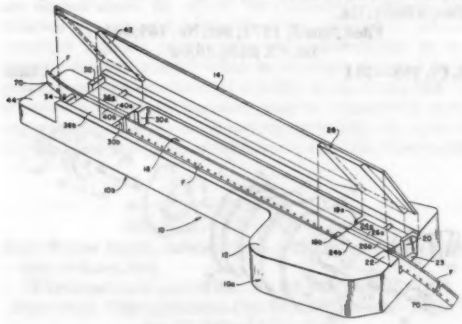
A blanaced vibratory conveyor system including a base resiliently mounting a trough-like conveying structure. A driving mechanism for reciprocating the conveyor is provided and in addition, counterpoise elements are mounted on the base for reciprocation relative thereto and are driven by the drive mechanism 180° out of phase with the reciprocation of the conveyor so as to balance out the vibratory forces generated through reciprocation of the conveyor.

3,750,867

CONTROL STRIP HOLDER

George T. Negus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

A continuation-in-part of Ser. No. 820,379, April 30, 1969, abandoned. This application Apr. 26, 1971, Ser. No. 137,347
Int. Cl. B65d *85/67*
U.S. Cl. 206—1 R **6 Claims**



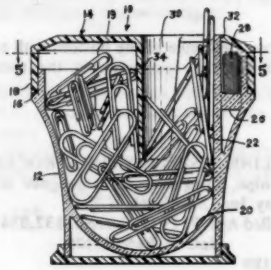
A holder for a control strip of film to be fed to a film processor includes a body portion in which the control strip is placed in a dark room and a cover that cooperates with the body portion to insure exclusion of light from the portions of the control strip located within the body portion. The end portions of the control strip project from opposite ends of the holder to permit splicing of the control strip to other film strips or leaders. One end of the holder is in the shape of a conventional film cartridge to facilitate feeding the control strip to a processor that is adapted to receive such cartridges and process film the processor removes from such cartridges.

3,750,868

DISPENSER FOR PAPER CLIPS AND THE LIKE

Joseph Cooper, Westport, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Dec. 16, 1971, Ser. No. 208,655
Int. Cl. B65d *83/02*
U.S. Cl. 206—1 R **4 Claims**



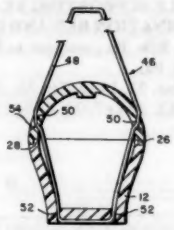
Paper clip dispenser has downward baffle to limit access of clip reserve to discharge opening. Few clips are held in opening by magnet. Side wall of opening is smooth to promote easy dispensing.

3,750,869

COMBINATION CARRYING CASE AND WIG STAND

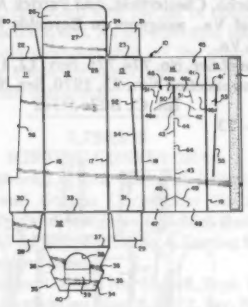
Norman Kartiganer, Worcester, Mass., assignor to Norman Kartiganer Inc., Manchaug, Mass.

Filed June 9, 1971, Ser. No. 151,358
Int. Cl. B65d *85/18*
U.S. Cl. 206—8 **6 Claims**



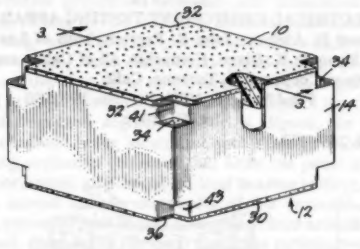
A hollow structure having an exterior crown-shaped portion for supporting a wig in its natural shape for display and/or dressing and a neck-shaped portion for holding the structure upright. The crown-shaped portion is preferably comprised of a material which permits pins to be inserted into it to enable fastening the wig thereto and has applied to its surface flock. The neck may be provided with a suction cup to fix it to a supporting structure. The interior provides a storage space for holding a wig or other article or articles and the structure is divided to provide access to the storage space. The entire structure is of such size and shape as to be imitative of a pouch and is adapted to be suspended on a sling so that it may be carried about as would a woman's handbag.

3,750,870
SHADOW BOX CARTON
Raymond A. Cote, Charlotte, N.C., assignor to Rexham Corporation, New York, N.Y.
Filed June 9, 1971, Ser. No. 151,300
Int. Cl. B65d 5/50
U.S. Cl. 206—45.14 8 Claims



A shadow box structure in which an article supporting strap extends completely across the front of the carton is disclosed herein. The article strap itself is of greater than full carton width being derived in part from the front wall panel and of the two carton side wall panels.

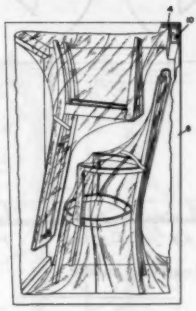
3,750,871
SHIPPING CONTAINER
John R. Cook, Middlebury, Ind., assignor to Engineered Foam Plastics, Inc., Elkhart, Ind.
Filed Feb. 14, 1972, Ser. No. 226,166
Int. Cl. B65d 81/16
U.S. Cl. 206—46 FC 9 Claims



A shipping container in which a pair of rigid foam plastic panels are secured in opposite ends of a paperboard tube and have shallow recesses in their inner faces receiving and positioning spaced parts of contained articles.

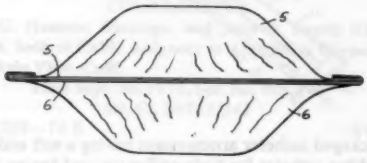
3,750,872
CHAIR PACK
Paul D. Bobb, High Point, N.C., assignor to Armstrong Cork Company, Lancaster, Pa.
Division of Ser. No. 886,531, Dec. 19, 1969, Pat. No. 3,642,127. This application June 25, 1971, Ser. No. 157,014
Int. Cl. B65d 85/00
U.S. Cl. 206—46 FN 1 Claim

A chair pack is provided for the shipping of two chairs within one carton. Each individual chair is fastened by a heat-shrinkable film to a piece of rigid corrugated fiberboard. The fiberboard is then fastened to the end of a carton to hold the fiberboard and chair in place. The fastening of a chair at each



end of the carton with the proper orientation of the chair backs provides a chair pack with two chairs therein.

3,750,873
COOKING AND STERILIZING BAG AND A BAG ROLL
Robert R. Roman, South Hackensack, N.J., assignor to Gravure-flex Packing Corp., South Hackensack, N.J.
Filed Jan. 6, 1972, Ser. No. 215,772
Int. Cl. B65d 79/00, 85/67, 85/72
U.S. Cl. 206—59 R 4 Claims

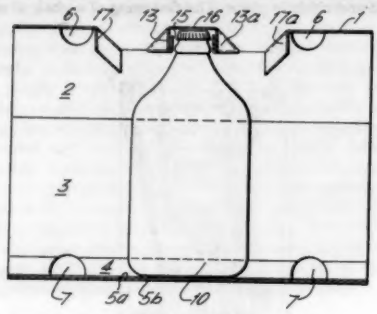


A bag and a bag roll is disclosed in which a food product is cooked or items sterilized. The bag is made of a plastic film which is resistant to the temperatures used in cooking secured along at least two opposite edges to a sheet of metallic foil. An adhesive is used to secure the edges together which adhesive is resistant to cooking temperatures so that the secured edges do not open up. Preferably the bag is open at both ends and closed when in use by folding over the open ends. The invention includes a bag roll which comprises a long film of plastic which is heat resistant to cooking temperatures and a corresponding length of foil secured at their longitudinal edges by a heat resistant adhesive. The attached films are rolled up for storage such as in a box having a cutting edge so that bags of desired length may be cut from the roll.

3,750,874
CARRIER PACKS
Josef Detzel, Weitnau/Allgau, and Walter Schragle, Kempten, both of Germany, assignors to Lever Brothers Company, New York, N.Y.
Filed Apr. 27, 1971, Ser. No. 137,930
Claims priority, application Germany, May 2, 1970, G 70 16 625.5
Int. Cl. B65d 5/46, 71/00
U.S. Cl. 206—65 E 2 Claims

A carrier of thin sheet material for carrying two rows of symmetrically disposed containers such as bottles and having

slits and fold lines transverse to the rows of bottles to form a centrally disposed carrying handle.

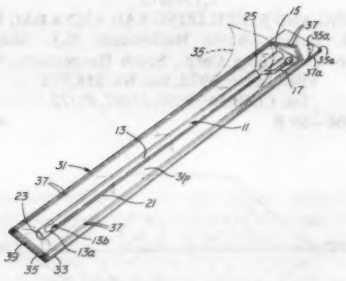


3,750,875

PACKAGED CATHETER ARRANGEMENT

Robert W. Juster, St. Louis, Mo., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.

Filed June 4, 1971, Ser. No. 150,068
Int. Cl. A61b *19/00*; B65d *85/20*
U.S. Cl. 206—63.2 R **10 Claims**



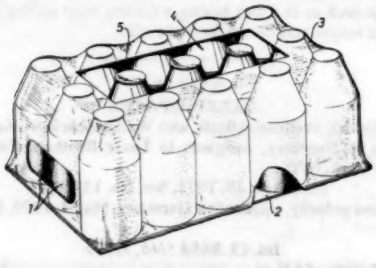
A packaged catheter arrangement having a soft and pliable latex rubber catheter for body orifice use and having its shaft slidably removably disposed within a relatively rigid tube sheath of plastic to form a catheter handling assembly which is enclosed as a unit within a peripherally sealed peel-apart dual sheet overpackage.

3,750,876

COLLECTIVE PACKAGE FOR PACKAGING CONTAINERS

Kaj Stellan Throberg, Malmo, Sweden, assignor to Sobrefina SA, Fribourg, Switzerland

Filed Aug. 16, 1971, Ser. No. 171,913
Int. Cl. B65d *65/16*, *71/00*, *85/62*
U.S. Cl. 206—65 S **5 Claims**



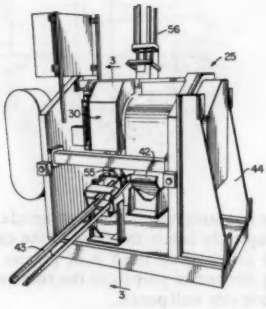
A collective package having a plurality of packages mounted on a support therefor and a shrink plastic film wrapping thereabout, the wrapping being provided with an upper opening to expose the top of at least one of the centrally located packages to permit easy withdrawal thereof from the collective package, and the method of forming the opening.

3,750,877

APPARATUS FOR AND METHOD OF INSPECTING CONTAINER MEANS

Daniel S. Dvacho, Chesterfield, and Patrick A. Fastabend, Bon Air, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 774,776, Nov. 12, 1968, abandoned.
This application Nov. 23, 1970, Ser. No. 92,291
Int. Cl. B07c *5/342*
U.S. Cl. 209—73 **42 Claims**



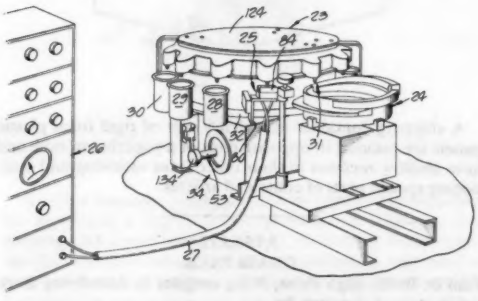
An apparatus for and method of inspecting wall means of containers utilizing a light-emitting device, a photosensitive device and a high speed rotatable carrier for serially moving each of the containers between such devices to enable any opening in the walls of the containers to be detected by light passing therethrough to energize the photosensitive device which in turn actuates a mechanism to reject the particular defective container.

3,750,878

ELECTRICAL COMPONENT TESTING APPARATUS

Raymond D. Atchley; John B. Pegram, both of Los Angeles, and Kenneth K. Dixon, Camarillo, all of Calif., assignors to K. Dixon Corporation, Tarzana, Calif.

Filed Nov. 15, 1971, Ser. No. 198,580
Int. Cl. B07c
U.S. Cl. 209—73 **7 Claims**



A quantity of generally rectangular chiplike devices, having electrodes on a pair of edges, are supplied to an unloading platform by a vibratory feeder. A cylindrical conveyor mounted adjacent the feeder includes on its outer periphery a set of vacuum conveying heads arranged at equal angles

thereabout. The conveyor is indexed about its central axis in angular increments, bringing each conveyor head in succession into operative relation with a device at the loading station. As the conveyor head comes into proximity of a device at the loading station it is connected to a vacuum pump whereby the device is retained to move along the circular path. In another station farther along the path of movement of the conveyor an appropriately dimensioned set of electrical contact plates is arranged so that the device picked up by a preceding conveyor head is connected with the set of contact plates for accomplishing electrical test. As the conveyor indexes farther, mechanical memory elements shut off the supply of reduced air pressure to the conveyor heads, allowing the tested device to fall into a selected receptacle.

3,750,879

SORTING CONVEYORS

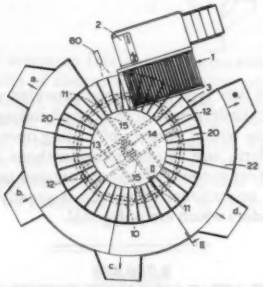
Christopher Hawthorn Luckett, Backwell, Bristol; John Travers Cosgrove, and Gordon Christopher Holland, both of London, all of England, assignors to British Railways Board, London, England a Public Authority & Sorting Systems Limited, Bristol, England

Continuation-in-part of Ser. No. 70,948, Sept. 10, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 231,920

Claims priority, application Great Britain, Sept. 18, 1969, 46,101/69

Int. Cl. B65g *47/38*

U.S. Cl. 214—11 R **14 Claims**



The invention provides a compact and economical construction of sorting device including a circular carousel comprising a ring with radial segmental panels, which ring is caused to rotate, each segmental panel being pivotally mounted on the ring so as to be tiltable about a generally horizontal axis lying at right angles to the radius of the ring on which that respective segmental panel is aligned, the tilting axis of each panel being located at such distance below the load bearing surface of the panel that when the panel is tilted from the horizontal, all parts of the load bearing surface of the panel are moved radially outwardly of the carousel, there being also conveyor feed means arranged to feed articles on to the carousel, there being disposed about the periphery of said carousel a plurality of chutes and wherein means are provided for selectively tilting individual segmental panels, or groups of segmental panels while these selected segmental panels are adjacent a selected chute to cause an article carried on such tilted segmental panel or panels to leave the carousel and enter the respective chute.

3,750,880

DISTRIBUTOR FOR RECTANGULAR FLAT ITEMS

Peter Petrovsky, Konstanz, and Max Bohm, Markelfingen, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

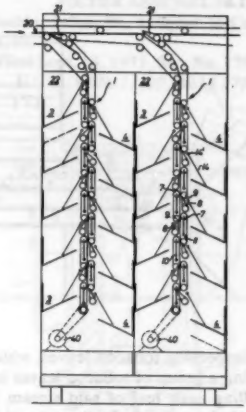
Filed June 27, 1972, Ser. No. 266,743

Claims priority, application Germany, June 30, 1971, P 21 32 400.5

Int. Cl. B07c *5/02*

U.S. Cl. 209—74 R **9 Claims**

An item distributo having a horizontally dipsosed main conveying path with a plurality of vertically disposed distributing paths branching downwardly from the main path through switches and distributing items to stacking compartments associated with the distributing paths. The stacking compartments are disposed on both sides of each distributing path so that there are two rows of stacking compartments between two adjacent distributing paths.



3,750,881

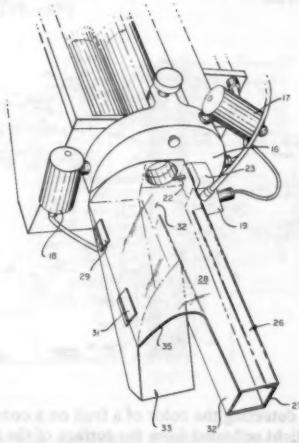
COLOR SORTER

Robert G. Husome, Saratoga, and John R. Sweet, III, Sunnyvale, both of Calif., assignors to Aerotherm Corporation, Mountain View, Calif.

Filed Sept. 30, 1971, Ser. No. 185,292

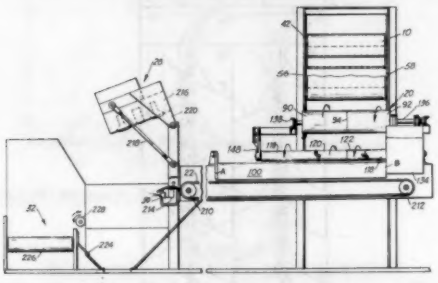
Int. Cl. B07c *5/342*

U.S. Cl. 209—74 R **5 Claims**



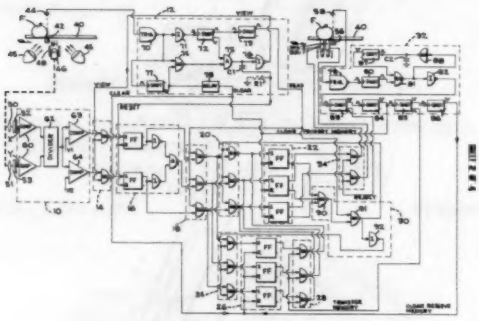
A color sorter which sorts products delivered in single file to a photoelectric scanning head by directing acceptable products into an accept chute and diverting products which do not match the color standard for the product into a reject chute designed and shaped to deflect the rejected products into reject bins and minimize reentry of deflected products into the accept chute.

3,750,882
AUTOMATIC GRADER
Gordon W. Hays, Midlothian, Va., assignor to AMF Incorporated, White Plains, N.Y.
Filed May 20, 1971, Ser. No. 145,243
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.6 **18 Claims**



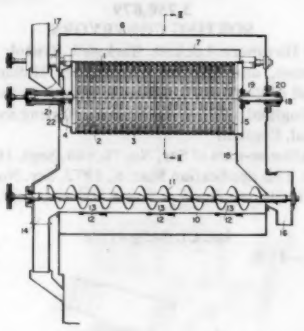
Apparatus for inspecting tobacco leaves, which comprises means for arranging a group of tobacco leaves into a stream, means for propelling each leaf of said stream in a ballistic path, a background plate mounted adjacent said ballistic path for establishing a predetermined color criteria, optical means mounted in spaced relationship with said ballistic path and said background plate for comparing each tobacco leaf while it is above background plate to the color criteria established by said background plate, and means for sorting the leaves in accordance with the results of the comparison thereof with said color criteria.

3,750,883
CIRCUITRY FOR SORTING FRUIT ACCORDING TO COLOR
Donald W. Irving, San Jose, and Charles S. Greenwood, Santa Clara, both of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed May 3, 1972, Ser. No. 249,974
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.6 **14 Claims**



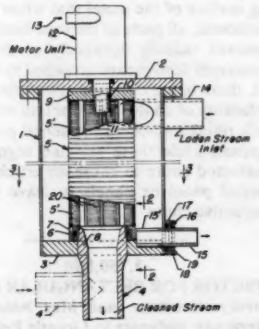
A circuit for detecting the color of a fruit on a conveyor by measuring the light reflected from the surface of the fruit at a viewing station and for providing an appropriate discharge signal so that the fruit will be discharged to a particular discharge location at a position spaced downstream from the viewing station. The circuit includes means for separately measuring the amount of light reflected within two distinct bands of wavelengths of light, continuously computing the ratio of the same to derive an analog ratio signal, and comparing the ratio signal with a plurality of predetermined ratio signals in order to obtain said appropriate discharge signal. A memory circuit is included so that discharge signals for a plurality of fruit can be stored for an indeterminate period of time before any one of such fruit is directed to its discharge location.

3,750,884
ROTARY AND FLOW TYPE RICE GRAIN SORTER
Toshihiko Satake, 2-38, Saijyo-cho Kamo-gun, Hiroshima-ken,, Nishihon-Machi, Japan
Filed Dec. 23, 1971, Ser. No. 211,297
Claims priority, application Japan, May 21, 1971, 46/41720
Int. Cl. B07b *1/22*
U.S. Cl. 209—284 **10 Claims**



A rotary and flow type grain sorter provided with a plurality of polygonal cylinders each formed by bending a corrugated perforated plate with a number of sorting openings, in which grains of uniform size is obtainable without a inclusion of crushed grains on account of said corrugated perforated plate and in which operational efficiency is greatly improved by means of cylinders which are polygonal.

3,750,885
STRAINER APPARATUS WITH POWER ASSISTED CLEANING MEANS
Paul W. Fournier, Saint Paul, Minn., assignor to Universal Oil Products Company, Des Plains, Ill.
Filed June 28, 1971, Ser. No. 157,563
Int. Cl. B01d *27/02*
U.S. Cl. 210—107 **10 Claims**



An improved strainer device is constructed so as to have rotatability of a cylinder-form screen filter by motor means such that flow blocking particles can be more readily washed off and removed from the outside of the screen by "shear" action and by a back-washing flow. A preferred design uses a

wedge-form of self-cleaning screen and peripherally spaced internal vertical bar means to enhance an outward radial flow which may be continuous, or peridically operated, to effect the removal of clogging material.

3,750,886

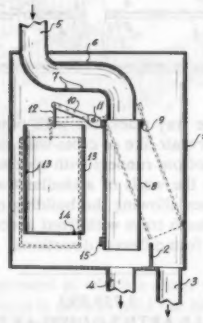
APPARATUS FOR MAINTAINING THE POTABILITY OF CISTERN WATER

Gerlof Berthy Salm, 10 rue Grenus, 1201 Geneva, Switzerland

Filed June 30, 1971, Ser. No. 158,296

Int. Cl. B01d *21/24*

U.S. Cl. 210—111 **3 Claims**



The present invention relates to an apparatus for maintaining the potability of cistern water operating automatically by means of the falling rain itself and having means for diverting the initial rainfall, which contains accumulated dirt, leaves, bird droppings, etc., to a sewer, drainage ditch, irrigation reservoir or the like, for a pre-determined period of time, after which the apparatus switches and conducts the rain water, now clean, to an underground cistern in the form of potable water.

3,750,887

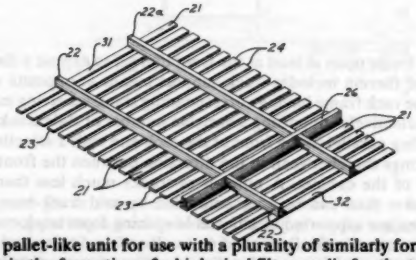
FILTER MEDIA FOR LIQUID WASTES TREATMENT AND METHOD OF FORMING THE SAME

Edwin R. Carlson, Eureka, Calif., assignor to Del-Pak Media Corporation, Oakland, Calif.

Filed Sept. 15, 1971, Ser. No. 180,549

Int. Cl. B01d *39/14*

U.S. Cl. 210—150 **8 Claims**



A pallet-like unit for use with a plurality of similarly formed units in the formation of a biological filter media for the treatment of liquid waste and the array of such units is disclosed. The unit includes a plurality of elongated growth supporting surfaces, preferably redwood laths, which are secured to supporting members positioned inwardly of the periphery of the unit and preferably in mutually perpendicular relation to form a self supporting stackable structure. The positioning of the supporting members enables stacking of the units in vertically superimposed horizontally extending layers with selected layers being horizontally staggered or displaced so that units overlap each other to even out dimensional variances and provide greater stability in the filter array.

3,750,888

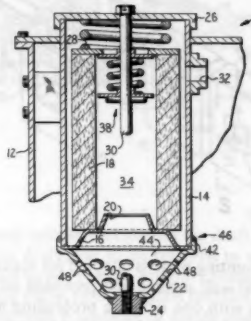
FILTER ASSEMBLY

James D. Rinaldo, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 13, 1971, Ser. No. 179,658

Int. Cl. E03b *11/00*; B01d *27/08*

U.S. Cl. 210—172 **9 Claims**



A filter assembly for filtering fluid returning to a reservoir including a filter housing, a base closing one end of the housing, an outlet port in the base, and a perforated fluid-diffusing member enclosing said base together with the housing in an axially stacked arrangement therewith to disperse the discharge of fluid from the outlet port in a relatively wide flow pattern in order to minimize surface turbulence and resultant aeration of the fluid within the reservoir.

3,750,889

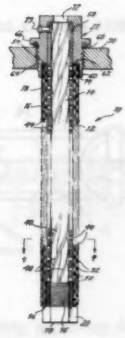
FILTER TUBE

William A. Acosta, 4101 Laurel Dr., Lafayette Hill, Pa.

Filed June 17, 1971, Ser. No. 154,107

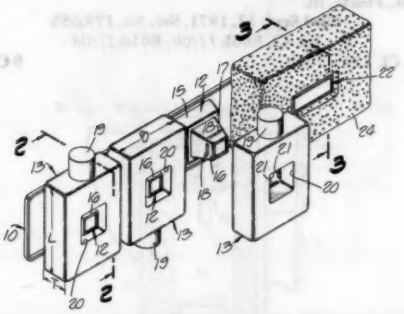
Int. Cl. B01d *29/10*

U.S. Cl. 210—497 **6 Claims**



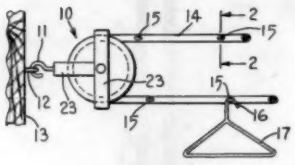
A filter tube comprising a perforated core, a connector at one end of the core, a plug at the other end of the core and a filter sleeve overlying the core. A core support or stabilizer is placed within the core, and comprises a rigid helical member. A channeled perforated drain screen is positioned between the filter sleeve and the core. The filter sleeve is removable and replaceable. The drain screen directs the filtered fluid passing through the filter sleeve into and through the core in laminar flow.

3,750,890
ARTICLE MOUNTING ARRANGEMENT
Dale D. Smith, Irvine, and James P. Sullivan, Tustin, both of Calif., assignors to Design West Incorporated, Irvine, Calif.
Filed Mar. 1, 1972, Ser. No. 230,602
Int. Cl. A47g 73/00
U.S. Cl. 211—75 **5 Claims**



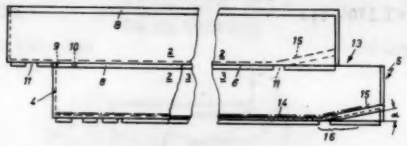
A racklike mounting plate is adapted for securement onto a generally vertical wall surface and provided on its outwardly directed surface with one or more protruding mounting pegs or studs, each of which studs has a keyed cross-section and is tapered toward its outermost end. One or more of the sides of a mounting stud has an elongated slot, all of which slots lie in the same general vertical plane. A container has an opening passing completely through its body portion of dimensions generally suitable for accommodating receipt onto the stud. The internal walls defining the container opening taper from both opposite outer surfaces to a maximum located substantially midway through the container forming protruding ridges or keys of such geometry as to permit fitting receipt within the slot on the mounting studs.

3,750,891
CLOTHES LINE
Frank Decorato, 32 Hillcrest Rd., Warren, N.J.
Filed Aug. 2, 1971, Ser. No. 168,160
Int. Cl. D06f 53/00
U.S. Cl. 211—119.02 **9 Claims**



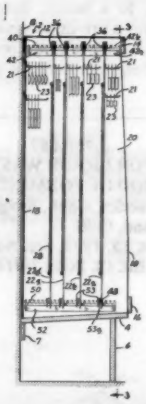
A clothesline adapted to be reeved and drawn around a conventional clothesline pulley and designed to accommodate the hooks of clothes hangers so as to carry them in spaced relation, comprises a narrow strip of flexible non-metallic material having spaced holes penetrating the strip, of size adequate to accommodate the hooks of clothes hangers. The strip has an overall width small enough to enable it to be reeved and drawn around a clothesline pulley. The holes may be lined with metal or plastic firmely attached to the body of the strip.

3,750,892
STACKABLE TRAY FOR TEMPORARILY STORING DOCUMENTS OR OTHER ITEMS
Wolfgang C. F. Grosse, Seestrasse CH-8804, Au bei Zurich, Switzerland
Filed Nov. 19, 1971, Ser. No. 200,490
Claims priority, application Germany, Dec. 5, 1970, P 20 59 960.4
Int. Cl. B65d 21/02
U.S. Cl. 211—128 **6 Claims**



A letter or like tray stackable with other similar trays in various upright or stair-like or cross-wise stack arrangements, the tray having bottom runners with recesses for interlocking engagement with the walls of a similar tray thereunder in a stack, said recesses allowing the building of cross-wise stack arrangements of such trays with front access openings facing in two or three or four different directions.

3,750,893
SMALL ARTICLE DISPLAY RACK
Ernest Kempler, 6621 N. Washtenau, Chicago, Ill.
Filed Aug. 16, 1971, Ser. No. 172,045
Int. Cl. A47f 5/10
U.S. Cl. 211—162 **16 Claims**



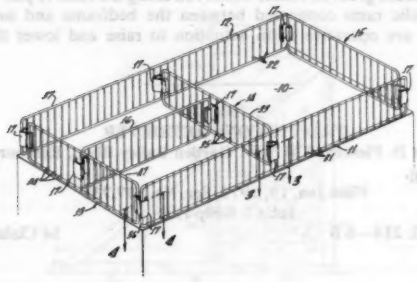
A frame open at least at the front thereof to expose a display space therein includes track support means at opposite sides of the rack frame having corresponding track-receiving means for selectively supporting a variable number of slide tracks extending parallel to the front of the rack and with a selection of spacings therebetween in the direction between the front and rear of the cabinet. A number of tracks much less than the number than can be accommodated by said track-receiving means are supported to adjustable spacing from track-receiving means. Vertically extending small article display and support units having small article holding means distributed thereover and each of the width no greater than about half the width of said display space are supported on said respective tracks for movement across the width of said display space from one side thereof to the other, so that movement of an article display and support unit to one side or the other of the rack will expose the article support unit immediately therebehind. The rack frame is designed so that parts thereof are foldable into a compact position for shipment and storage.

3,750,894

BINNING ARRANGEMENT

Jens S. Jensen; Edward M. Hamrock, and Clair E. Lookabaugh, all of Whittier, Calif., assignors to Enterprise Wire Products, Inc., Bell Gardens, Calif.

Filed Oct. 14, 1971, Ser. No. 189,159
Int. Cl. A47f 5/14
U.S. Cl. 211—184 8 Claims



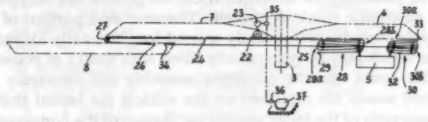
A binning arrangement in which a sheet metal clip having two U-shaped sections is used to hold the binning dividers to front and back fences made of wire, the fences being held to the shelf by prongs on the mesh wires which extend beneath the shelf or by separate clips. The back fence may be eliminated with the ends of the dividers held by separate clips having wires defining a slot to receive the ends of the framing wires of the dividers, or the dividers may have a framing wire with a resilient back portion having an outwardly bent end adapted to fit through an opening in the shelf to exert a force in holding the back portion of the divider.

3,750,895

YARD JIB CRANE

Pierre Durand, Lyon, France, assignor to Societe Anonyme Richier, Paris, France

Filed Jan. 22, 1971, Ser. No. 108,753
Claims priority, application France, Jan. 22, 1970, 7002194
Int. Cl. B66c 23/72
U.S. Cl. 212—48 10 Claims



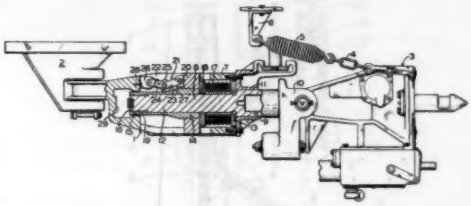
A yard jib or tower crane having a vertical mast, a hoist boom supporting a load hoist truck being pivotally supported for rotation about the mast end including a first beam and a second beam attached to said first beam and being radially movable relative thereto; a counterweight boom supporting a balancing weight compensating for the moments about the mast generated by said truck-supporting boom; and a control including a replaceable profile cam for predetermined radial displacement of said second beam relative to the first beam and of the balancing weight along the counterweight boom during angular displacement in a horizontal plane of said boom about the mast.

3,750,896

DRAFT GEAR HAVING EMERGENCY RELEASE MEANS

William B. Jeffrey, Irwin, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 17, 1972, Ser. No. 244,384
Int. Cl. B61g 9/04, 3/00
U.S. Cl. 213—75 R 5 Claims



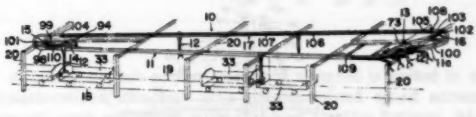
An emergency release mechanism for draft gear apparatus that permits the draft gear to be restored to a normal condition after an emergency release without causing damage to the unit or requiring replacement of parts therefor. The draft gear unit is provided with a plurality of toggle joints which act as solid links under normal buff loads, but which are collapsible under collision forces. Bias springs urge the toggle joints back to their normal alignment whenever the load thereon is removed by pull-apart forces between the adjacent cars.

3,750,897

AUTOMATIC RELEASING APPARATUS FOR COUPLERS OF RAILWAY VEHICLES

Kenichi Murato, Yokohama; Yasuo Maruyama, Tokyo; Mitsuro Wakao, Urawa; Shogo Takahashi, and Hisao Takami, both of Tokyo, all of Japan, assignors to Japanese National Railways and Kayabakogyokabushikikaisha, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,320
Claims priority, application Japan, Dec. 26, 1970, 45/118759
Int. Cl. B61g 3/08
U.S. Cl. 213—211 11 Claims



The automatic releasing apparatus for couplers of railway vehicles comprises a circuit-like travelling guide rail positioned above a rail system and a number of robots suspending from the guide rail, each having automatic releasing mechanism for the couplers.

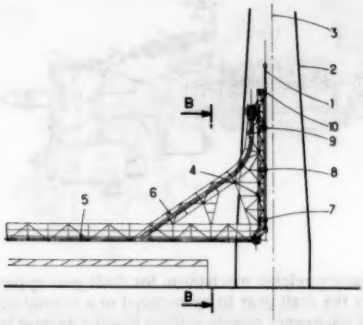
Couplers of railway vehicles are adapted to send out the robots one by one by conforming the sending out speed to the speed of the railway vehicles so as to pull out locking cotters automatically by means of the releasing mechanisms of respective robots, and to restore the cotters to their starting position by moving the releasing apparatus along the travelling guide rail.

3,750,898

AUTOMATIC DRILLING-ROD TRANSFER DEVICE

Gerard Ancey, L'Hay-les-Roses, and Rene Bourree, Fontenay-aux-Roses, both of France, assignors to Groupement Atomique Alsacienne Atlantique, Le Plessis-Robinson, France

Filed Oct. 29, 1971, Ser. No. 193,724
Claims priority, application France, Oct. 30, 1970, 7039317
Int. Cl. E21b *19/00*
U.S. Cl. 214—1 Q 3 Claims



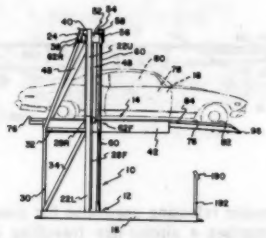
The device enables the automatic transfer of drilling rods held in the vertical position inside a derrick to a horizontal position near to a storage area and the reverse transfer operation, and comprises a carriage provided with bistable chucks for holding a triple set of rods during transfer. The carriage moves along two pairs of rails; the first pair of rails is horizontal, the second pair of rails starts off as an inclined curve through an angle of 30° to 45° in relation to the horizontal position and coming into the vertical position near the derrick, thus, the center of gravity of the load carriage describes a straight line.

3,750,899

VERTICAL-LIFT DOUBLE-DECK PARKING STRUCTURE

Edward M. Greer, Beverly Hills, Calif., assignor to Crown Parking Products Co., Commerce City, Colo.

Filed Mar. 18, 1971, Ser. No. 125,700
Int. Cl. B66f *7/04*
U.S. Cl. 214—16.1 EC 20 Claims



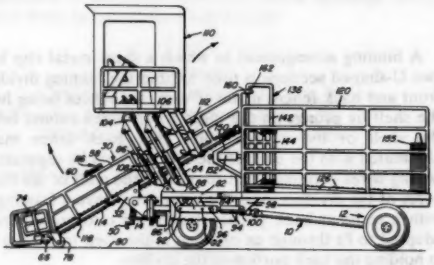
This invention relates to a double-decked parking structure having a ground-anchored bedframe carrying two upright stanchions located in transversely spaced parallel relation to one another so as to admit an automotive vehicle therebetween. These stanchions each carry two rails, one on the front face extending from near ground level up to at least roof-top height and the second continuing on up beyond the first but along the rear face thereof. An elevatable subframe is mounted between the stanchions for movement vertically thereof between a raised or elevated position and a lowered one resting on the ground. This subframe includes a horizontal vehicle-support platform, the major portion of which projects forwardly beyond the stanchions, and a pair of upright masts that mount grooved rollers which run along the rails. A pair of hydraulic rams connected between the bedframe and subframe are operative upon actuation to raise and lower the latter.

3,750,900

TRAFFIC CONE RETRIEVER

Robert D. Piercey, 238 N.W. Garden Balley Blvd., Roseburg, Oreg.

Filed Jan. 19, 1971, Ser. No. 107,735
Int. Cl. B60p *1/36*
U.S. Cl. 214—6 B 14 Claims



A motorized land vehicle including a forwardly displaced and opening scoop discharging rearwardly onto the lower end of a rearwardly and upwardly inclined endless conveyor discharging rearwardly at a location with which a transversely shiftable upwardly opening receptacle is registered. The upper discharge end of the conveyor assembly discharges laterally into the front side of the upper portion of the receptacle and the vehicle is adapted to move along a roadway and sequentially engage and pick up traffic cones from the roadway for conveying the cones rearwardly and upwardly along the conveyor assembly for subsequent discharge into the receptacle for automatic stacking therein. The rear end portion of the vehicle includes transversely spaced longitudinally extending isles which may be sequentially filled with stacks of retrieved traffic cones and the conveyor assembly and forwardly displaced scoop are mounted on the vehicle for lateral shifting transversely of the latter and for oscillation of the conveyor assembly and forwardly displaced scoop about a horizontal transverse axis spaced intermediate the opposite ends of the conveyor assembly whereby the forward lower end of the conveyor assembly may be elevated above the roadway for transit from one location to another while the upper rear end of the conveyor assembly is lowered downward toward a support position with the conveyor assembly generally horizontally disposed. The forward end portion of the conveyor assembly which supports the forwardly disposed scoop is articulated for upward swinging movement of the forward scoop supporting end of the conveyor assembly relative to the remainder thereof and the vehicle includes a forwardly and upwardly displaceable operator's cab for shifting to a forwardly and upwardly displaced position during traffic cone retrieving operations of the vehicle.

3,750,901

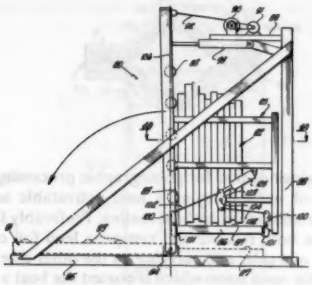
LOAD SQUARING APPARATUS

Thomas N. Melin, 1424 24th Ave., Longview, Wash.

Division of Ser. No. 704,196, Nov. 8, 1967, Pat. No. 3,596,776, which is a division of Ser. No. 609,973, Dec. 6, 1966, Pat. No. 3,376,985, which is a continuation-in-part of Ser. No. 401,594, Oct. 5, 1964, abandoned. This application Mar. 4, 1971, Ser. No. 121,041

Int. Cl. B65g *57/60*

U.S. Cl. 214—6 S 5 Claims



The invention encompasses apparatus for rendering coplanar the end surfaces of all the pieces of timber in a stack of lumber by placing the stack in near vertical position while subjected to slight lateral constraints, and then dropping (or its equivalent) the stack end-wise to a foundation to produce a vertically effective impact upon the stack sufficient to cause the various timbers to move longitudinally relative to each other against the friction between the timbers, thereby to move the lower ends of all the timbers into a common plane. The stack is then returned to a horizontal position in such a manner that the timbers do not move longitudinally relative to each other.

3,750,902

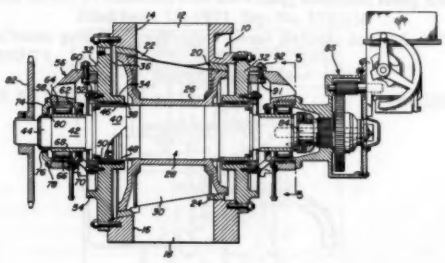
ROTARY VALVE IMPROVEMENTS

James R. Starrett, Springfield, Ohio, assignor to The Bauer Brothers Company, Springfield, Ohio

Filed Mar. 1, 1971, Ser. No. 119,682

Int. Cl. B66c *17/04*

U.S. Cl. 214—17 CC 8 Claims



This disclosure is directed to material handling valves of a rotary type featuring unique bearing support structure for its rotor shaft. Such support structure is distinguished by eccentric inserts which are simply adaptable to readily preset the valve rotor and condition the valve housing to accommodate various conditions of differential pressure to which the rotor may be exposed. The structure enables that on operation of a valve under conditions where different portions of its rotor are exposed to different temperatures and pressures the rotor will inherently center in its housing.

3,750,903

UNLOADER FOR REMOVING STOCK FOR A BODY OF STOCK CONTAINER IN A STORAGE SPACE

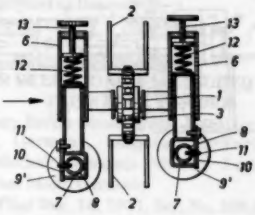
Karl Scherz, Hauptplatz 7, Deutschlandsberg, Austria

Filed July 13, 1971, Ser. No. 162,042

Claims priority, application Austria, July 21, 1970, 6615

Int. Cl. B65g *65/38*

U.S. Cl. 214—17 DB 11 Claims



An unloader arm is adapted to be mounted over the body of stock. Stock-detaching and conveying means are carried by said unloader arm and adapted to engage said body of stock and to detach stock therefrom, and to convey detached stock for removal from said storage space. Two pressure rolls are carried by said unloader arm and disposed on opposite sides of said stock-detaching and conveying means and extend parallel thereto and are arranged to apply pressure to said body of stock as said stock-detaching and conveying means engage said body of stock.

3,750,904

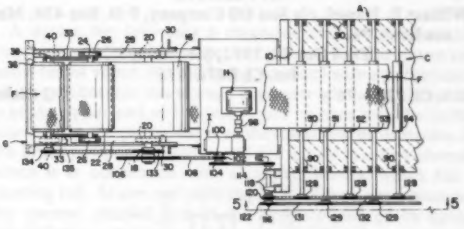
HEAT TREATING FURNACE

Lee Gail Wisler, Beloit, Ohio, assignor to The Electric Furnace Company, Salem, Ohio

Filed June 30, 1971, Ser. No. 158,158

Int. Cl. B65g *23/44*

U.S. Cl. 214—21 24 Claims



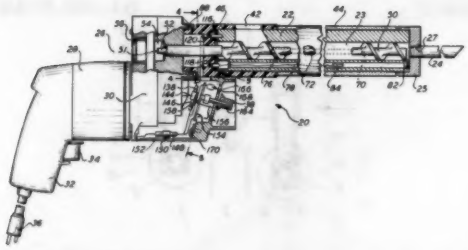
A conveyor belt or flat elongated material is pulled in a predetermined direction at a predetermined speed across spaced-apart supporting rolls in a heat treating furnace. Alternate ones of the supporting rolls are rotatably driven to move the peripheral surfaces thereof at a speed greater than the predetermined speed and in a direction for imparting frictional forces to the belt or flat elongated material acting in the predetermined direction. The remainder of the rolls are rotatably driven so that the peripheral surfaces thereof move in a manner for imparting frictional forces to the belt or flat elongated material acting opposite to the predetermined direction. Alternate addition and subtraction of forces act on the belt or flat elongated material to provide essentially uniform tension in the belt or flat elongated material to obtain an essentially uniform catenary between rolls. The alternate addition and subtraction of forces maintains at a minimum the tension required to pull the belt or flat elongated material through the furnace.

3,750,905

HAND-HELD EXTRUDING APPARATUS

Norman S. Wolfrom, Cranford, N.J., assignor to Hardman Incorporated, Belleville, N.J.

Filed Aug. 23, 1972, Ser. No. 283,203
Int. Cl. B67d 5/62
U.S. Cl. 222—23 16 Claims



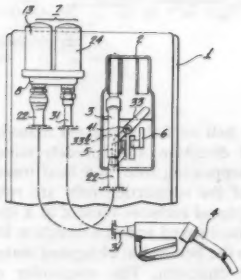
A hand-held extruding apparatus for applying thermoplastic sealant materials. The apparatus includes a barrel having a material feed passage extending therethrough. A plurality of heating element passageways extend parallel to the feed passage, with rod-like heating elements being mounted therein. A heat sensor is mounted in another parallel passageway in the barrel, and the sensor together with the heating elements are disposed in a control circuit enabling a preselected temperature to be accurately maintained. Material fed into the barrel is advanced by a motor-driven conveying screw toward an orifice at the outlet of the feed passage. The barrel is secured to a pistol-grip and housing portion of the device in such manner as to enable interchangeability of barrels, and to minimize heat transfer from the barrel to the grip and housing.

3,750,906

TWO-NOZZLE SYSTEM FOR LIQUID FUEL DISPENSING APPARATUS

William B. Hansel, c/o Sun Oil Company, P.O. Box 426, Marcus Hook, Pa.

Filed Oct. 28, 1971, Ser. No. 193,264
Int. Cl. B67d 5/12
U.S. Cl. 222—74 2 Claims



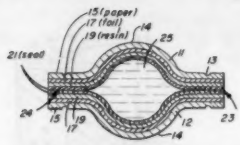
A blending-type liquid fuel dispensing apparatus is provided with two separate nozzles, one a special nozzle for dispensing only low-lead or lead-free (unleaded) fuel, and the other a more conventional nozzle for dispensing blends of this fuel and a highly leaded fuel, as well as the highly leaded fuel alone. The apparatus has an interlocking arrangement which permits either nozzle to be utilized separately, but which prevents utilization of both nozzles simultaneously.

3,750,907

FLUID CONTAINERS HAVING BOTH RELATIVELY STRONG AND RELATIVELY WEAK SEALS

John D. Steele, Columbia, S.C., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 835,420, June 23, 1969, abandoned. This application Apr. 8, 1970, Ser. No. 26,604
Int. Cl. B65d 35/08, 35/14, 35/16
U.S. Cl. 222—107 26 Claims



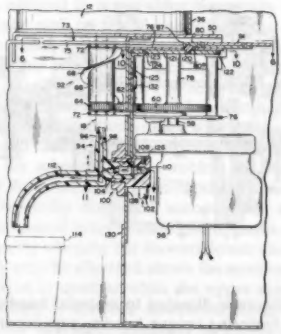
A fluid container or pod for photographic processing liquid having a pair of walls carrying a heat activatable adhesive sealed together marginally by heat sealing. Preferably the container walls are both flexible and comprise lead foil carrying kraft paper on one side; and carrying on the other side a coating of a synthetic resin upon which is coated the heat activatable adhesive. The heat activatable adhesive is selected from the group consisting of (a) a plurality of mixed polymers, and (b) a mixture of a polymer selected from the group consisting of alcohol-soluble cellulose acetate butyrate, a polyhydroxy ether resulting from copolymerization of bisphenol A with epichlorohydrin, and toluene-soluble cellulose acetate butyrate, with a plasticizer selected from the group consisting of triphenyl phosphate and sulfonamide-formaldehyde resin. By varying the temperature, pressure and time in heat sealing, selected portions of the seal can be relatively strong, and other selected portions relatively weak, for controlled release of liquid through the weak seal portions when pressure is applied.

3,750,908

CONCENTRATE DISPENSER WITH SUPPLY CONTAINER REMOVABLE FROM PERISTALTIC PUMP

Carl C. Bauerlein; Linda M. Wertz, and Kenneth L. Acuff, all of Clearwater, Fla., assignors to Lykes Pasco Packing Co., Dispenser Manufacturing Div., Clearwater, Fla.

Filed Oct. 2, 1970, Ser. No. 77,431
Int. Cl. F04f 3/00
U.S. Cl. 222—80 8 Claims



A dispenser designed to mix a relatively viscous concentrate contained in a disposable container removably mounted therein with a diluent and then dispense the resultant diluted mixture. A peristaltic type pump is used on a flexible conduit which is removably connected between the disposable container and a mixing nozzle assembly. The mixing nozzle assembly includes a valve arrangement for controlled mixing of

the diluent with the concentrate in proper porportions immediately prior to exiting from the dispenser.

3,750,909

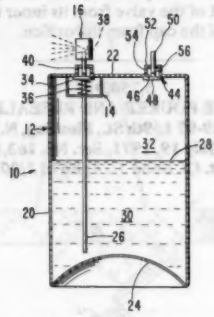
AEROSOL DISPENSER WITH AUXILIARY VALVE

James L. Butler, 16th & Hwy. 1, Montara, Calif.

Filed July 28, 1972, Ser. No. 276,207

Int. Cl. B67d *1/08*

U.S. Cl. 222—148 **6 Claims**



An aerosol dispenser having a pair of fluid valves, one of which is an auxiliary valve and can be used to purge the dispenser nozzle to prevent caking or solidifying of the dispensed material, such as paint which has dried in the nozzle orifice after being dispensed by the main valve of the dispenser. The auxiliary valve is located so that it can be placed in direct fluid communication with the space containing the pressurized gas of the dispenser. The nozzle is removably mountable on either valve and is normally carried by the main valve. In a preferred embodiment of the dispenser, the auxiliary valve is located on the top of the dispenser so that it can communicate directly with the pressurized gas in the upper portion of the dispenser.

This invention relates to improvements in aerosol dispensers and, more particularly, to such a dispenser having an auxiliary valve for use in cleaning out the nozzle normally carried on the main valve thereof.

3,750,910

COMBINED MIXER AND POURER

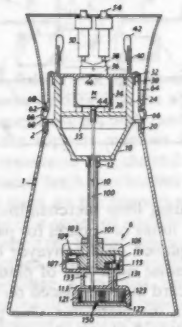
Yuen Se-kit, 97 Main St., Cha Kwo Ling, Kowloon, Hong Kong

Filed Sept. 13, 1971, Ser. No. 179,838

Claims priority, application Great Britain, Jan. 25, 1971, 3,093/71

Int. Cl. B67d *5/48*

U.S. Cl. 222—239 **10 Claims**



This invention relates to an improved agitating and pumping device, comprising: a housing; a gear chamber in said housing; an inlet and outlet for said chamber; a pair of gears in said chamber for pumping liquids through said chamber; a centrifugal-type agitator supported by said housing; a pawl-type ratchet mechanism to actuate the agitator; and a drive member to effect rotation of the gears and the agitator; wherein rotation of the drive member in one direction causes the ratchet mechanism to be engaged and thus causes the agitator to rotate, and in the opposite direction causes the ratchet mechanism to be disengaged and the pump to pump a liquid from the inlet to the outlet.

3,750,911

DEVICE FOR DELIVERING A MEASURED CHARGE OF A FLOWABLE POWDER

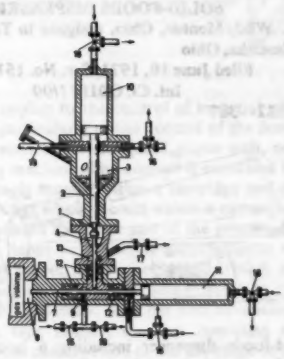
Helmut Ebner; Bernd Stumer, and Hans Lang, all of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Dec. 16, 1971, Ser. No. 208,839

Claims priority, application Germany, Dec. 18, 1970, P 20 62 513.2

Int. Cl. B01j *4/02*

U.S. Cl. 222—254 **6 Claims**



A device for delivering a measured charge of a flowable powder comprising a storage container, a vertical piston rod and a buffer vessel, the rod being provided with a constriction which reaches into the storage container when the piston rod is at the upper end of its stroke, and reaches into the buffer vessel when the piston rod is at the lower end of its stroke. In the latter position the piston rod fits tightly in a first channel which is in connection with a second channel which has a clearing rod. At one end of its stroke the clearing rod occupies the second channel and at the opposite end of its stroke establishes a communication between the first channel and the open end of the second channel.

3,750,912

POWDER DISPENSER

Edward T. Miels, 4800 Williamsburg Ln. No. 133, La Mesa, Calif., and Sven Andreasson, 6805 Lanewood Ct., San Diego, Calif.

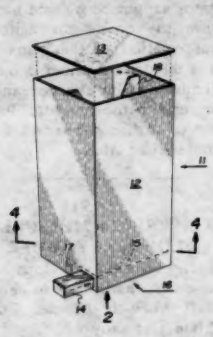
Filed Nov. 24, 1971, Ser. No. 201,911

Int. Cl. G01f *11/24*

U.S. Cl. 222—359 **4 Claims**

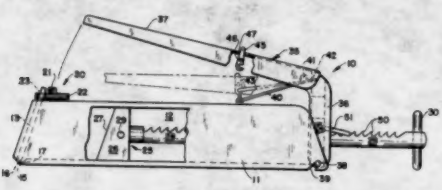
A powder dispenser for dispensing a metered predetermined volume of powder, such as instant coffee, in which a ratchet arm is slidably received within a slot in the bottom of a container, the ratchet arm being spring biased outwardly with a retaining shoulder and having a plurality of teeth in contact with the teeth of a circular ratchet gear which is fixedly attached to a stirring paddle rotating with the ratchet gear ans stirring the contents of the housing; a dispensing disc coupled to the ratchet gear and disposed over a bottom plate in the

housing and having a plurality of apertures dimensioned for carrying a premetered volume of powder; a spring detent for



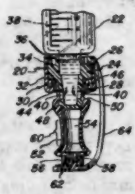
centering the apertures over an aperture in the bottom plate and for drop activation of the contained metered powder.

3,750,913
SOLID-FOODS DISPENSER
Heinz K. Wild, Mentor, Ohio, assignor to Te Wilo Industries Inc., Eastlake, Ohio
Filed June 10, 1971, Ser. No. 151,883
Int. Cl. G01f *11/00*
U.S. Cl. 222—387 **20 Claims**



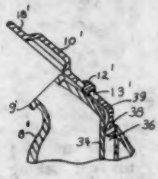
A solid-foods dispenser including a housing defining a chamber for receiving a stick of solid material to be dispensed, such as cold butter. An adjustable closure defines an adjustable discharge opening adjacent one end of the housing. A ratchet moves a plunger through the housing in the direction of the closure to compress the material and dispense it through the discharge opening in the form of a continuous ribbon. The plunger registers with the closure to assure complete discharge of the material from the chamber.

3,750,914
CONTAINER DRAINAGE VALVE
Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Aug. 17, 1971, Ser. No. 172,528
Int. Cl. B67d *3/00*
U.S. Cl. 222—543 **14 Claims**



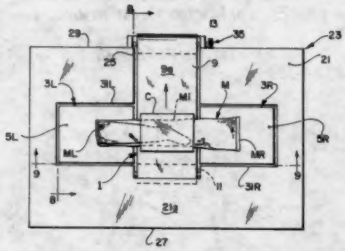
A reciprocating valve for a container, the valve including a stem and seat. The stem is movable between an outer position with the stem spaced from the seat to permit fluid flow from a cavity in the container through the valve, and an inner position with the stem sealingly engaged against the seat to prevent passage of fluid. A flexible tube extends from the valve and has a sufficient length to permit compression of the tube by a user's fingers to regulate the passage of fluid through the tube. A cap is removably positioned on an orifice adjacent the outer end of the tube to selectively close the orifice, and a strap connects the cap with a portion of the valve intermediate a reciprocating portion of the valve and the container. The strap is sufficiently long to permit placement of the cap on the orifice in the inner valve position, but is sufficiently short to prevent movement of the valve from its inner to outer position without removal of the cap from the orifice.

3,750,915
WINE POURER AND RESEALER
Patrick Kearney, 49-07 169th St., Flushing, N.Y.
Filed July 19, 1971, Ser. No. 163,802
Int. Cl. B65d *5/74*; B67d *3/00*
U.S. Cl. 222—567 **1 Claim**



A wine pourer and resealer comprising a housing adapted to be secured to the neck of a wine bottle. The housing has a neck portion for pouring wine and a cap for airtight closing of the neck portion. A vent adapted to extend into a bottle neck is integrally secured to the housing wall. Means for airtight closing of the neck portion and the air vent are provided.

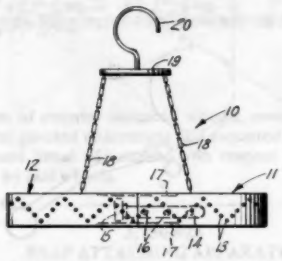
3,750,916
FOLDING APPARATUS
Myron Scott Stringer, Siler City; Daniel W. Smith, Durham; Robert G. MacIvergan, Raleigh, and Robert W. Eldenbaum, Cary, all of N.C., assignors to Kellwood Company, St. Louis, Mo.
Filed Sept. 20, 1971, Ser. No. 181,875
Int. Cl. A41h *33/00*
U.S. Cl. 223—37 **32 Claims**



Apparatus for folding limp merchandise, such as hosiery, panty hose, or other items of apparel for packaging, in which the merchandise is placed on a conveyor belt with end portions of the merchandise on a pair of platforms on opposite sides of the belt. A card may be placed on the portion of the merchandise between the platforms. One platform is moved inwardly over the belt to fold over the respective end portion of the merchandise and then returned to its retracted position alongside the belt, after which the other platform is moved inwardly over the belt to fold over the other end portion of the

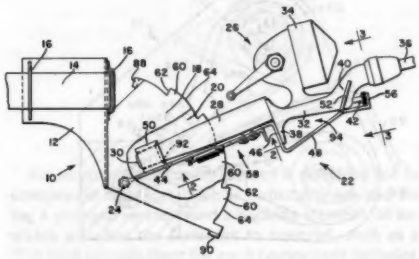
merchandise and then returned to its retracted position alongside the belt. As each platform moves inwardly, it is tilted to be inclined downwardly from its outer end.

3,750,917
PANTY HOSE HANGER
Lydia Villani, 2241 S. 24th St., Philadelphia, Pa.
Filed Mar. 21, 1972, Ser. No. 236,656
Int. Cl. D06c *15/00*
U.S. Cl. 223—74 **1 Claim**



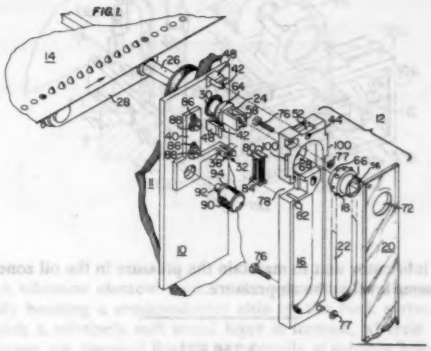
A device for suspending pantyhose includes a pair of U-shaped members juxtaposed to define an elongated frame capable of being inserted within the open end of the pantyhose. The members are perforated to permit air to circulate therethrough for expediting drying of the pantyhose. The frame is capable of being adjusted to accommodate pantyhose of various sizes. A hook is connected to the frame by chains to enable the frame to be suspended.

3,750,918
FISHING ROD HOLDER
Arthur B. Jensen, R. R. 1, Box 232A, Moline, Ill.
Filed Aug. 25, 1971, Ser. No. 174,776
Int. Cl. A45c *1/04*
U.S. Cl. 224—5 E **15 Claims**



A body-mounted fishing rod holder including a support member adapted to be held against the abdomen of the user by a belt or a strap encircling the body, and a rod holder structure mounted on the support member for vertical pivotal movement about a transverse axis, the rod holder structure including a spring-biased latch mechanism cooperable with a plurality of ratchet teeth on the support member to hold the structure in any one of a series of angularly spaced positions. The ratchet teeth permit the holder structure to be raised from one position to another by merely exerting an upward force thereon, but necessitate a manual release of the latch mechanism to lower the structure between positions. The support member is composed in part of a pair of parallel plates extending forwardly on opposite sides of the rod holder structure and having the ratchet teeth formed in their leading edges, the plates serving as guide members facilitating quick and easy insertion of the rod on the rod holder structure.

3,750,919
FORMAT CONTROL TAPE CARTRIDGE AND MOUNTING ASSEMBLY THEREFORE
Paul R. Hoffman, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Dec. 20, 1971, Ser. No. 209,777
Int. Cl. B65h *25/00*
U.S. Cl. 226—9 **12 Claims**

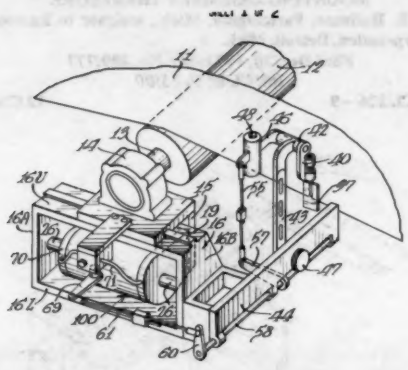


This invention applies to the control of material advancing means and more particularly to the control of the format of a record medium, such as an elongated paper web, advanced through a printing machine. The control is exercised by a format tape protectingly housed within a cartridge and drivingly engaged by a sprocket wheel therein which is connectable to a driving shaft associated with that part of the printing machine for advancing the paper web. The cartridge with the enclosed tape and sprocket wheel is mounted upon a plate assembly carried by the machine having protruding operating elements, one a driving shaft associated with the web advancing means and the other a tape reader, the two operating elements cooperating with the construction of the cartridge to enter the same and in the first instance drivingly couple the sprocket wheel to the drive shaft and in the second instance disposing the tape reader in position to read the tape within the cartridge. When drivingly coupled to the drive shaft, the sprocket wheel is supported thereby so that it is free of any contact with the surfaces of the cartridge within which it is housed. Also provision is made for adjusting the tape reader while the cartridge is mounted on the printing machine.

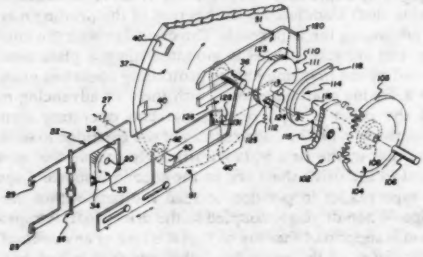
3,750,920
WEB GUIDE
Richard W. Fountain, and Darrel D. Johnson, both of Appleton, Wis., assignors to Gilbert & Nash Company, Inc., Appleton, Wis.
Filed Apr. 5, 1971, Ser. No. 131,011
Int. Cl. B65h *25/26*
U.S. Cl. 226—23 **4 Claims**

An improved web guide for paper wires or other webs is disclosed employing a duplex air-hydraulic cylinder unit constructed with a single piston in a cylindrical tube to move a guide roller. A web edge follower and mechanical linkage govern an air pressure valve for supplying, in response to sensed web misalignments, different pressures to the sides of the piston. This air pressure difference moves the cylinder housing coupled to the roller so as to correct the web misalignment. The piston includes a longitudinally extending oil zone between it and the bore walls and a hydraulic seal ring affixed to the cylindrical tube. The ring divides the oil zone into two chambers which change volume with piston movement. A restricted flow path between the chambers prevents overcorrection and promotes smooth motion of the piston and roller. This arrangement provides for automatic lubrication of the

piston and simplified construction and operation of the web guide. The oil zone is preferably fed by oil taken from an air line lubricator unit to maintain the pressure in the oil zone at the same level as the air pressure.



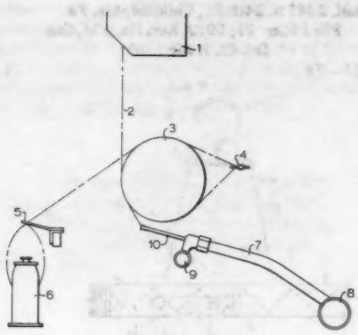
3,750,921
TWO FRAMES PER SECOND DEFEAT MECHANISM
John J. Bundschuh, 901 Elmgrove Rd., Rochester, N.Y.
Filed May 4, 1972, Ser. No. 250,263
Int. Cl. G03b 1/22
U.S. Cl. 226—62 **5 Claims**



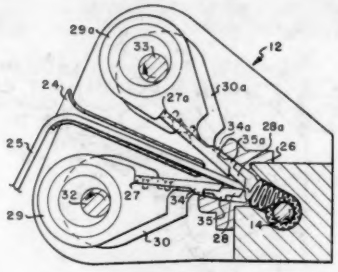
An improved intermittent film transport mechanism for a motion picture projector includes a film claw which is caused to engage and advance the film in the projector at a periodic rate and also includes a member for intermittently intercepting the claw so as to achieve advancement of the film at a fraction of such periodic rate. The member is caused to move in a synchronous relation with the claw by a cam which is selectively operated by the engagement or disengagement of a pawl and ratchet mechanism.

3,750,922
ASPIRATOR
Thomas J. Bethea; Charles R. Dixon, both of Rock Hill, S.C.; Wyatt P. Hargett, Jr., and William H. Stokes, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.
Filed Dec. 30, 1971, Ser. No. 213,862
Int. Cl. B65h 17/32
U.S. Cl. 226—97 **4 Claims**

An aspirating device suitable for use in conjunction with the doffing of yarn wound members, the device employing a vacuum to pick up a yarn end and a selective compressed air supply to increase yarn threadline tensions only during initial yarn attachment to the next member to be wound. The compressed air is fed through a bushing member which serves to create a rarefield atmosphere and to spread the yarn filament bundle, increasing yarn cross-sectional area and consequently yarn tension.

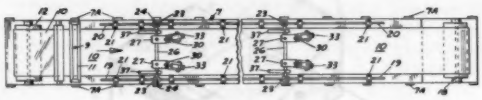


3,750,923
COATING APPARATUS
Norman E. Klein, Rt. 2, Inman, S.C.
Division of Ser. No. 858,094, Sept. 15, 1969, Pat. No. 3,703,154.
This application Feb. 25, 1972, Ser. No. 229,607
Int. Cl. B65h 17/42
U.S. Cl. 226—112 **7 Claims**



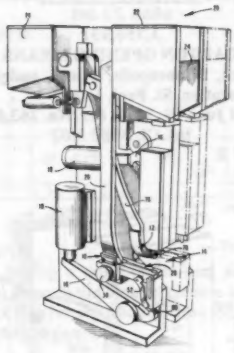
Apparatus for extruding a coating around a core including an extruder screw, stock feeder means operatively associated with the screw, and core coating means disposed adjacent the delivery portion of the screw; the stock feeder comprising pairs of opposed finger elements positioned to contact strip stock and means for sequentially moving the pairs of finger elements to engage the strip stock and to advance same into contact with the extruder screw; the coating means comprising a die having an opening therethrough, a guide member disposed within the opening forming a cavity through the die, means for withdrawing a coated core material from the die and means adjacent the cord withdrawal means responsive to variations in the thickness of the coated core to control the withdrawal means.

3,750,924
WEB TENSIONER AND GUIDE SYSTEM
Orlyn G. Pepper, 355 Everett, Milan, Mich.
Filed Jan. 17, 1972, Ser. No. 218,227
Int. Cl. B65h 23/16
U.S. Cl. 226—174 7 Claims



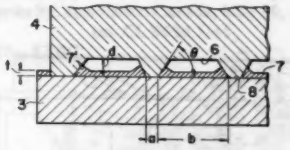
A system of counter-balanced wheels, mounted for lateral and vertical pivoted adjustment and mounted for lateral, longitudinal and lineal adjustment with respect to a web to be contacted by said wheels.

3,750,925
SNAP ATTACHING APPARATUS
Erich A. Schmidt, and Volker E. Schmidt, both of Lexington, Ky., assignors to Textron Inc., Providence, R.I.
Filed Dec. 7, 1971, Ser. No. 205,550
Int. Cl. B25c 7/00
U.S. Cl. 227—18 24 Claims



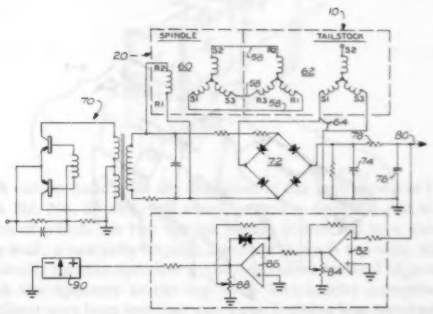
An improved feed arrangement is disclosed for feeding two component fasteners, such as buttons, snaps and the like having a pronged element and a backing element, to an apparatus which attaches the fasteners to material, such as a garment. The feed arrangement for each component includes a hopper-chute assembly, a guide channel and a driving means. Each hopper-chute assembly is readily detachable from the apparatus to provide rapid substitution of one type or style of fastener for another and includes means preventing discharge of elements from the chute when the assembly is detached from the apparatus. The guide channel and drive means are arranged to receive elements from the chute and move them successively in a single step to a setting station where an anvil and a ram forcefully bring the elements together. The guide channel for the pronged elements is formed by a pair of spaced, opposed wall members spring biased towards each other. The wall members have faces of non-linear shape and taper towards each other in the direction of feed to form a labyrinth configuration therebetween. This configuration serves to align the prongs with the axis of the channel so that they will not be prematurely and unwantedly deformed by jaws on the anvil.

3,750,926
VIBRATION ELEMENT FOR SUPERSONIC BONDING
Yuzaburo Sakamoto, Musashimurayama; Hiroshi Nishizuka, and Kakutaro Kawai, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Chuyoda-ku, Tokyo, Japan
Filed Mar. 2, 1971, Ser. No. 120,288
Int. Cl. B23k 1/06
U.S. Cl. 228—1 1 Claim



A vibration element used for the apparatus for supersonically bonding a semiconductor chip on the back surface of which a relatively soft metal layer is formed, wherein thin grooves are disposed linearly or curvedly at suitable intervals in the surface of the vibration element so that the surface of the element has a sufficiently large vibration communicating area.

3,750,927
APPARATUS AND CONTROL FOR ANGULAR ALIGNMENT OF INERTIA OR FRICTION WELDED PARTS
Robert G. Miller, Metamora; John W. Crayton, Washington; Charles G. Farmer, Edelstein, and Ronald L. Satzler, Metamora, all of Ill., assignors to Production Technology Inc., Peoria, Ill.
Filed Nov. 12, 1971, Ser. No. 198,256
Int. Cl. B23k 27/00
U.S. Cl. 228—2 2 Claims



Friction welded parts are rotatively aligned by turning one part with respect to the other through the hot plastic interface after the parts have been welded. A position error circuit measures the relative angular position of the parts at the end of the weld and activates a rotary actuator to turn one part with respect to the other until the desired angular alignment is obtained.

3,750,928

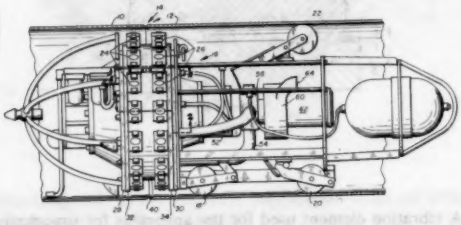
VACUUM SEAL FOR INTERNAL PIPELINE LINE-UP CLAMP

Lamar T. Valentine, 7374 E. 58th St., Tulsa, Okla.

Continuation of Ser. No. 18,363, Feb. 27, 1970, abandoned, which is a continuation of Ser. No. 666,432, Sept. 8, 1967, abandoned, which is a continuation-in-part of Ser. No. 650,274, June 30, 1970, Pat. No. 3,538,594. This application Aug. 6, 1971, Ser. No. 169,848

Int. Cl. B23k *19/00*

U.S. Cl. 228—44 6 Claims



A vacuum seal system is utilized in combination with an internal pipeline line-up clamp used in the welding of abutted elements, particularly lengths of pipe. A resilient and expansible seal is adapted to be attached to and movable with the actuating plungers or dogs of the internal alignment clamp. The seal is adapted to extend slightly above the 180° lower portion of the pipe joint to be welded. A vacuum or withdrawal of air in the sealed space will override the gravity influence of the welding process.

3,750,929

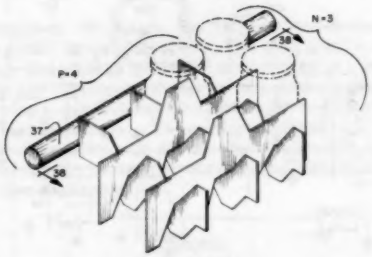
CARTON PARTITION ASSEMBLY

Thomas L. Flanagan, Killingworth, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Apr. 19, 1971, Ser. No. 135,272

Int. Cl. B65d *5/48*

U.S. Cl. 229—15 6 Claims



A partition assembly is disclosed for use in packing an array of articles, such as glass bottles or jars, in a carton, or tray, with selected portions of mutually perpendicular partition elements being utilized to separate the articles within the array so as to prevent breakage during normal jostling in handling of the carton. Each partition element is so designed that it can be readily cut from a continuous strip of paperboard material with a minimum of waste, and nevertheless posses a sufficient contact area or segment between each pair of adjacent articles in the array.

3,750,930

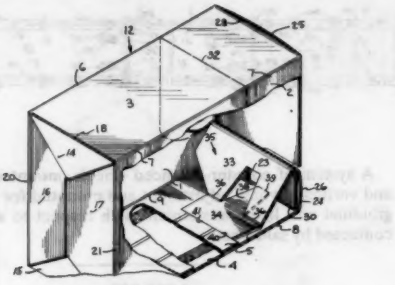
CARTON

Albert L. Roth, Spring Valley, N.Y., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed June 28, 1972, Ser. No. 267,218

Int. Cl. B65d *5/72*

U.S. Cl. 229—17 B 7 Claims



A unitary carton blank adapted to be erected to form a dispensing carton for packaged articles is disclosed. The carton is formed having a tear-away zone to provide an access opening to facilitate removal of selected packages in the container and an inclined plane with a locking means integrally formed on one side of the carton so that the packages near the said side can be easily removed from the package.

3,750,931

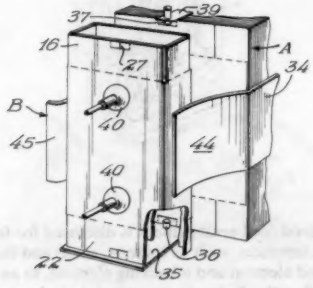
CARTON OPENING MEANS

Raymond S. Dick, Minneapolis, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed June 19, 1972, Ser. No. 263,865

Int. Cl. B65d *5/02*

U.S. Cl. 229—37 R 6 Claims



A pair of opposed flaps are provided in closure flaps connected to a panel of a paste end carton to permit the passage of retaining fingers while squaring up the cartons from a flat folded state as the cartons are withdrawn from a hopper.

3,750,932

CONTAINER HAVING IMPROVED BELLOWS CLOSURE AND BLANK FOR MAKING SAME

Donald E. Ellison, Clayton, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.

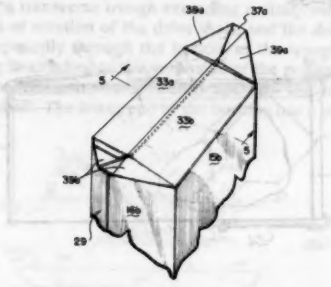
Filed July 28, 1971, Ser. No. 166,921

Int. Cl. B65d *5/02*

U.S. Cl. 229—37 R 15 Claims

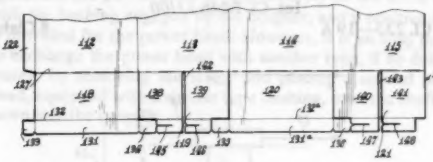
A corrugated fiberboard container having an improved bellows closure biased to remain in closed condition, once folded, and thereby eliminate the necessity of gluing closure flaps prior to filling. Illustrated is a container having a bellows

bottom closure made up of four interconnected panels of equal length wherein diagonal score lines which do not meet provide trapezoidal closure flaps. The length of the closure panels provides an overlapping of the longer closure flaps in



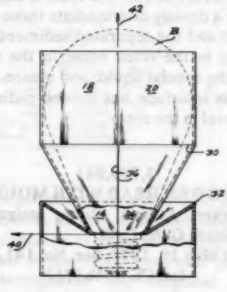
the closed condition with the edge of one flap nesting within the edge of the other. Slits are provided in the glue flap in the closure region which permit the glue flap to be hinged to the longer side wall and adhered to the shorter end wall thereby leaving the side wall unobstructed.

3,750,933
CONTAINER AND CLOSURE FOR THE SAME
Theodore E. Nicolay, 505 N. Lake Shore Dr., Chicago, Ill.
Filed July 22, 1971, Ser. No. 165,191
Int. Cl. B65d
U.S. Cl. 229—39 R **11 Claims**



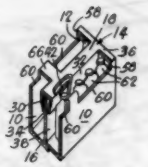
A container having a top, bottom and side panels and a locking closure, wherein the locking closure includes a closure panel and a tuck flap having foldable ears for engaging the underside of the closure panel.

3,750,934
CONTAINER WITH AXIAL INTERLOCKING MEANS
Ronald E. Clinage, Ashland, Ohio, assignor to A. L. Garber Company, Ashland, Ohio
Filed Jan. 18, 1972, Ser. No. 218,740
Int. Cl. B65d 5/10
U.S. Cl. 229—39 B **1 Claim**



A container of fiberboard or the like, formed into a polygonal shape and comprising panels defined by creases. Apertures are provided along the creases to permit introflexing a portion of the panels normal to the axis of the container, resulting in an axial constriction. The introflexed portion thereby becomes axially fixed, with the result that the container becomes rigid.

3,750,935
CARTON
Allardus A. Akkerman, Calgary, Alberta, Canada, assignor to Domtar Limited, Montreal, Canada
Filed Apr. 14, 1972, Ser. No. 244,077
Claims priority, application Canada, May 10, 1971, 112,539
Int. Cl. B65d 5/46
U.S. Cl. 229—52 BC **9 Claims**



A carton is formed having a longitudinally extending reinforcing beam formed by an elongated reinforcing panel defined in the top of the carton and by a central partition panel secured to the elongated reinforcing panel. Flaps are provided on opposite sides of the reinforcing panel to extend across the top of the carton and part-way down the side walls thereby to facilitate opening of the carton and withdrawal of the contents,

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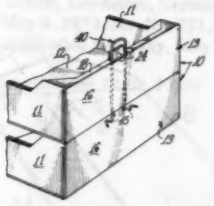
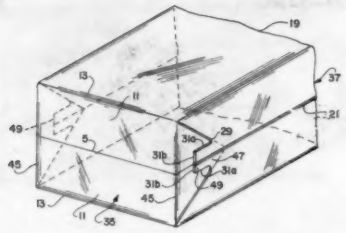
3,750,936
HANDLE FOR PRODUCE CONTAINER
Walton B. Crane, Sherman Oaks, Calif., assignor to Allied Plastics Company, Sherman Oaks, Calif.
Filed Jan. 14, 1971, Ser. No. 106,434
Int. Cl. B65d 5/46
U.S. Cl. 229—52 AW **3 Claims**



A carrier handle for the container of the type shown in U. S. Pat. Re. No. 26,386, and which comprise opposite end walls, each of which has two spaced panels connected by a narrow top wall, a centrally located aperture in each top wall, and a centrally located aperture in the bottom, in vertical alignment with the aperture in the top wall. The carrier comprises a resilient wire bent into hair-pin form, forming legs terminating in extremities bent laterally away from one another through substantially a right angle to form oppositely extending feet. The legs are bent together with the grip of the hand to withdraw the feet sufficiently to enter the aperture in the top of an end wall, and then released, so that the feet project into positions underlying portions of the top wall at opposite ends of the entrance aperture. The extremities of the wire portions forming the feet are bent at right angles to the plane defined by the two legs of the wire carrier, and are of a length to gouge into the confronting end panel. The feet from which these extremities, barbs, or prongs project are backed up by the opposite end panel. The carrier is thus securely engaged with the

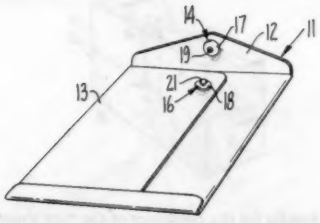
end wall structure, will stay in that position while coupling to a second container, and can be used to carry the container, either with or without a second container stacked thereon.

3,750,937
PLASTIC BAG WITH EASY-OPEN FEATURE
Ralph C. Goodwin, Wayzata, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.
Filed Oct. 19, 1971, Ser. No. 190,547
Int. Cl. B65d *33/00*
U.S. Cl. 229—66 **8 Claims**



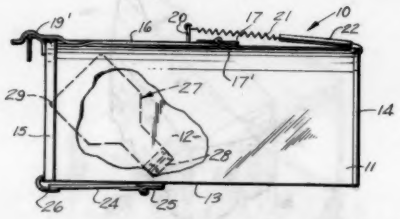
A plastic bag having a gussetted bottom and sealed at both sides, and having special end formations for the gussetted bottom such as to provide a tab at the lower end of each side seal when the bag is packed, either of these tabs being adapted to be grasped and pulled upwardly toward the upper end of the bag to tear the bag open.

3,750,938
PLASTIC CLOSURE FOR PAPER CONTAINERS AND METHO OF MAKING SAME
Robert F. Wiseman, 1227 Anza, San Francisco, Calif.
Filed Jan. 13, 1971, Ser. No. 106,134
Int. Cl. B65d *27/12*
U.S. Cl. 229—77 **6 Claims**



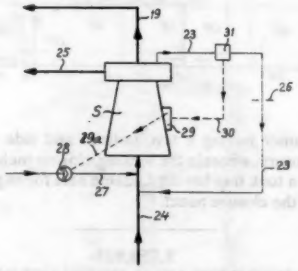
The present invention relates to a container such as a paper envelope having an access closed by a flap releasably held closed by plastic snaps comprising a first snap element securely bonded to the body of the envelope, and a second snap element securely bonded to the flap, said first and second snaps adapted to releasably attach to each other, with the snap elements each being directly bonded to the paper-like material, and formed for combined strength and efficiency of space. The invention also provides a method of making a plastic closure system directly on a paper envelope having a main body section and a closure portion, which comprises molding a thermoplastic element directly adjacent to the main body and bonded therewith during formation thereof, and molding a second and mating closure element on the closure portion by direct molding with a thermoplastic material and in contact with said closure portion.

3,750,939
SIGNALS FOR MAIL BOX
Earl D. Hallett, Rt. No. 2, Box 95, Columbia, Mo.
Filed Aug. 16, 1972, Ser. No. 281,227
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 **3 Claims**



A multiple number of signals for a mail box, include an enlarged spring lifted signal having hinge means for securing it to the top of a mail box, a side and gravity operated signal which is releasable by opening the mail box door, and a gravity operated bottom signal hinged to the bottom and including an extending lip for engagement with the mail box door.

3,750,940
CONTROL MEANS FOR SELF-DISCHARGING CENTRIFUGE
Vilgot Raymond Nilsson, Hagersten, Sweden, assignor to Agfa-Laval AB, Tumba, Sweden
Filed Dec. 3, 1971, Ser. No. 204,625
Claims priority, application Sweden, Dec. 7, 1970, 16514/70
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 A **8 Claims**

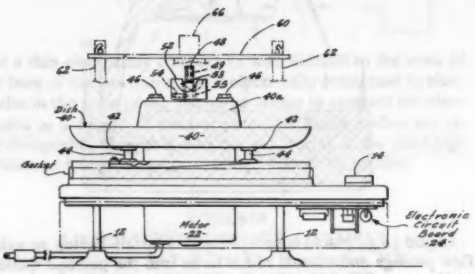


The centrifugal rotor has an inlet for the mixture to be separated, a central outlet for a separated liquid component of the mixture, and peripheral outlets for separated sediment of the mixture, means being provided for alternately opening and closing the peripheral outlets. The rotor is charged with a special liquid having a density intermediate those of the separated liquid component and the separated sediment, whereby an interface is formed in the rotor between the separated liquid component and the special liquid; and means are provided for sensing when this interface has moved radially inward to a predetermined level in the rotor.

3,750,941
CENTRIFUGE POWER HEAD WITH MOUNTING MEANS
Robert M. Drucker, Astoria, Oreg., assignor to Bio-Consultants, Inc., South Gate, Calif.
Filed May 10, 1971, Ser. No. 141,656
Int. Cl. B04b *9/12*
U.S. Cl. 233—26 **3 Claims**

An improved centrifuge structure is provided for medical diagnostic purposes, and the like, and which is particularly

suited for use in conjunction with urine, blood and microhematocrit analyses. The structure involves an electric motor which is supported so that its drive shaft extends upwardly along the central axis of the centrifuge, and a coupler, in accordance with the invention is attached to the shaft by means, for example, of a set screw, or other means. The coupler defines a transverse trough extending radially with respect to the axis of rotation of the drive shaft, and the drive shaft extends upwardly through the bottom of the trough. A mating bushing is attached to the underside of the power head of the centrifuge, and it has a central aperture for receiving the motor shaft. The lower end of the bushing has a configuration



which is shaped to fit into the transverse trough of the coupler. A screw extends down through the power head and through the bushing to be threaded into the upper end of the drive shaft.

The aforesaid screw may have a knurled head to permit it to be loosened and tightened by hand. When the screw is tightened, the power head is held securely on the drive shaft with the bushing engaged by the coupler, and a positive drive is provided for the power head. However, it is an easy matter to exchange the power head with another type, if so desired, merely by removing the screw and placing a second power head, equipped with a similar type bushing, over the shaft and down into the coupler.

3,750,942

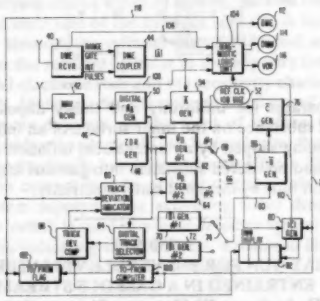
DISTANCE MODE AREA NAVIGATION COMPUTER

Stephen F. Bean, Columbus, Ohio, assignor to Autech Corporation, Columbus, Ohio

Filed Jan. 24, 1972, Ser. No. 219,992

Int. Cl. G06g 7/78

U.S. Cl. 235—150.27 **17 Claims**



An area navigation computer is disclosed which is designed to be compatible with all standard VOR and DME receivers. To avoid dependence on the characteristics of the latter, the DME information is generated by direct processing of the transponder interrogation and response data. Multiple waypoint address selection capability is provided by digital generation of waypoint bearing and range data, and digital processing of the VORTAC to aircraft and VORTAC to waypoint vector data. Selected track angle information is also generated digitally to maximize operational accuracy at lowest possible cost.

3,750,943

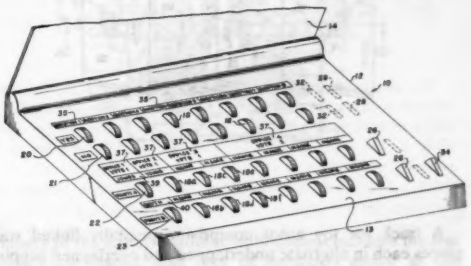
VOTING APPARATUS

Stanley N. Darling, and Reyi Darling, both of 1248 Crigflower Rd., Victoria, British Columbia, Canada

Filed July 7, 1972, Ser. No. 269,715

Int. Cl. G07c 13/00

U.S. Cl. 235—54 R **52 Claims**



Voting apparatus by means of which candidates in a general election can be selected and votes for these duly recorded. Votes can also be recorded for answers to specific questions. The apparatus can include means to enable a voter simultaneously to select all of the candidates of a desired party and to register these votes. In addition, the apparatus can be very easily set up for a primary election which enables a person to select the party for which he wishes to vote, after which he cannot vote for anyone in the other party, and then to select candidates within that party and record the votes.

3,750,944

ZERO STOP DEVICE TEN KEY CALCULATING AND ADDING MACHINES

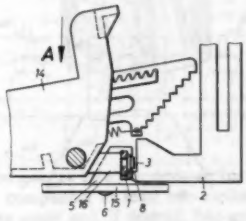
Gerhard Weskamp, Thalfingen, Germany, assignor to Walther Buramaschinen, GmbH,, Gerstetten, Germany

Filed May 8, 1972, Ser. No. 251,437

Claims priority, application Germany, May 8, 1971, P 21 22 783.8

Int. Cl. G06c 23/04, 27/00

U.S. Cl. 235—60 TK **7 Claims**



A ten key calculating and adding machine has a set pin carriage displaceable transversely beneath the keyboard. A plurality of value selector members are actuated by the set pin carriage. A flexible band has a plurality of longitudinally spaced lugs along the center of one face and the lugs are engageable by the slides in their zero positions so as to constitute a zero stop member. The flexible band is slideably guided along a guide member fixed within the machine and has one end attached to the carriage and the other end to a spring so as to displace the carriage.

3,750,945

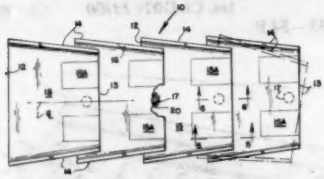
TRACK FOR TOY AUTOS

Joseph P. Warr, 1810 N. Park Ave., Eugene, Oreg.

Filed Mar. 20, 1972, Ser. No. 236,037

Int. Cl. A63g *21/00*

U.S. Cl. 238—10 E **2 Claims**



A track for toy autos comprising pivotally linked track pieces each in alternate underlapped and overlapped supporting relationship at its ends with adjacent track pieces. The lapped portions include pivot means permitting articulated adjustment of each piece to provide track curves of various radii. Sidewalls of each piece confine the toy auto on the track. The traction surface of each piece includes beveled areas for an uninterrupted continuous traction surface for the track.

3,750,946

RAIL JOINTS

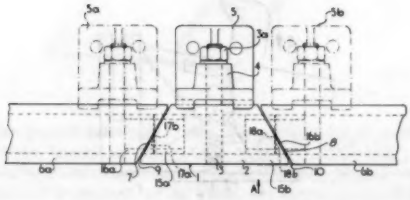
Andre Jacquemet, Grand-Lancy, Geneva, Switzerland, assignor to Battelle Memorial Institute and Dunlop Limited, Geneva, Switzerland and London, England

Filed Feb. 8, 1972, Ser. No. 224,513

Claims priority, application Great Britain, Feb. 15, 1971, 4,630/71

Int. Cl. E01b *11/60*

U.S. Cl. 238—226 **2 Claims**



A rail system for a vehicle in which a joint piece interconnects adjacent lengths of rail. Each joint piece is of similar cross section to the rails and is wedge shaped to co-operate with wedge shaped ends on the rails. Engagement means are provided within the cross-section of the rails which transmit at least part of the vehicle weight from the joint-piece to the rails, of which the following is a specification.

3,750,947

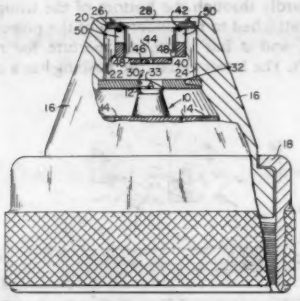
ATOMIZING NOZZLE ASSEMBLY

Nathaniel Hughes, Beverly Hills, Calif., assignor to Energy Sciences Incorporated, El Segundo, Calif.

Filed Sept. 2, 1971, Ser. No. 177,280

Int. Cl. F23d *11/16*

U.S. Cl. 239—11 **10 Claims**



Liquid (e.g., paint) is sprayed with a nozzle having an axial flow passage and coaxial radial holes into the passage spaced 180° apart intermediate the nozzle inlet and outlet.

3,750,948

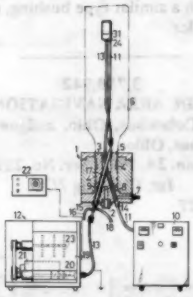
APPARATUS FOR DEPOSITING POWDERED SUBSTANCE ON THE INNER SURFACE OF INFLATION TUBE

Shiro Saito, Tokyo, Japan, assignor to Nikka Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1971, Ser. No. 197,087

Int. Cl. B05b *5/02*

U.S. Cl. 239—15 **7 Claims**



An apparatus for uniformly and thinly depositing finely powdered substance on the inner surface of an inflation tube, which is being shaped by an ascensional inflation method, by diffusing said powdered substance into gaseous atmosphere in the inflation tube by means of static electricity.

3,750,949

SPRAY GUN FOR PULVERULENT MATERIAL ENTRAINED IN A GASEOUS STREAM

Manfred H. Luderer, Weiler zum Stein, and Anton Ettenhofer, Winnenden, both of Germany, assignors to Atlas Copc. Aktiebolag, Nacka, Sweden

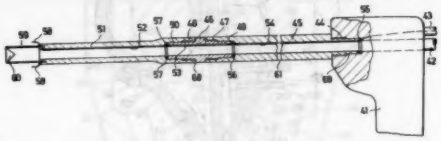
Division of Ser. No. 819,229, April 25, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,381

Int. Cl. B05b *5/02*

U.S. Cl. 239—15 **16 Claims**

A spray gun, for spraying pulverulent material, entrained in a pressurized gaseous stream, onto workpieces comprises a

number of interchangeable tubular parts whereby it may be lengthened or shortened, and a plastic composition tube may extend through the spray gun body to transport the pulverulent material. The interchangeable parts constitute a tubular gun barrel extending between an inlet and a discharge orifice,



and a thin electrically conductive wire extends in the zone of the bore of the gun barrel and is electrically connected to electrodes in the zone of the discharge orifice to connect the electrodes to a source of electric potential. Baffle bodies are interchangeably pluggable into the gun barrel at the discharge orifice, and may be designed as high voltage electrodes.

3,750,950

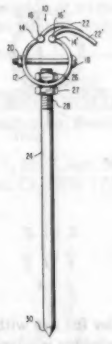
LIQUID SENSING SWITCH ASSEMBLY

Robert V. Whitener, 20 Tall Tree Ct., Huntington, N.Y.

Filed Aug. 10, 1971, Ser. No. 170,525

Int. Cl. B05b *17/04*

U.S. Cl. 239—63 **4 Claims**



A switch assembly activated by conductive liquids, typically water, and based upon use of a longitudinally slit resilient cylinder, carrying one of a pair of spaced, parallel rod-shaped electrodes at each side of the cylinder wall slit. A bolt passed transversely through the cylinder may be adjusted as to constrict or relax the resilient cylinder to thereby vary the spacing of the parallel electrode rods and the sensitivity characteristics of the switch. Moisture, for example, in the form of sprinkler produced water droplets, or the level of surface irrigation water, may bridge the electrode gap by impinging thereon and spreading longitudinally by surface tension effects. The resulting change in current may be utilized to trip a relay in an irrigation system supplying the activating water droplets, or—where the switch is used in a level detector system—to provide a precise indicating signal that the monitored liquid level has become accessible to the electrode gap.

3,750,951

HEAT SYSTEM FOR DISHWASHER

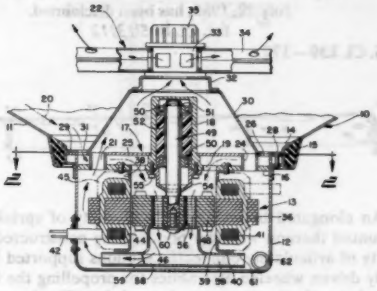
Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Nov. 3, 1971, Ser. No. 195,197

Int. Cl. F04b *23/04*

U.S. Cl. 239—139 **12 Claims**

A dishwasher in which fluid temperature is elevated by the direction of the fluid into heat transferral contact with the electric drive motor which supplies the conventional pumping power. In one embodiment of the invention a split phase motor is employed having windings enclosed in an oil bearing jacket and fluid is circulated both internally and about the



periphery of the motor. Another embodiment includes the less conventional shaded pole type of induction motor as the power source and an encapsulated winding construction which provides insulation from but contact with the water for heat exchange.

3,750,952

NOZZLE-HEAD FOR A WATER-COOLED BLOWING LANCE

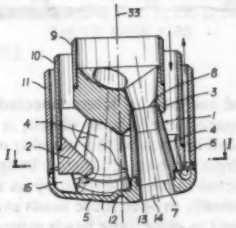
Otto Schweng; Hellmuth Smejkal; Hans Vereb, and Karl Eicher, all of Linz, Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Division of Ser. No. 61,090, Aug. 5, 1970, Pat. No. 3,662,447.

This application Nov. 26, 1971, Ser. No. 202,702

Int. Cl. B05b *15/00*

U.S. Cl. 239—132.3 **2 Claims**



The invention relates to a nozzle-head for a water-cooled blowing lance comprising at least one outlet opening for a gaseous refining agent and, if desired, fine-grained fluxes, an inlet piece, at least one nozzle tube leading through a water-cooled space and a front plate to which the at least one nozzle tube is connected, in which the improvement resides in that both the inlet piece and the front plate are provided with tubular projections which are connected with each other to form said nozzle tubes, the connection plane lying perpendicularly to the nozzle-head axis at a distance from the front plate amounting to about one-fourth to two-thirds of the height of the nozzle-head. The number of connecting seams corresponds to the number of nozzle tubes; the seams are far away from the front plate and thus sheltered from any danger to damage.

3,750,953

ELECTRICALLY DRIVEN CIRCULAR IRRIGATION SYSTEM

Richard F. Reinke, P.O. Box 272, Deshler, Nebr.

Division of Ser. No. 792,013, Jan. 17, 1969, Pat. No. 3,608,826. This application Sept. 22, 1971, Ser. No. 182,725. The portion of the term of this patent subsequent to July 28, 1988, has been disclaimed.

Int. Cl. B05b *3/12*

U.S. Cl. 239—177 **7 Claims**

An elongated boom having a plurality of sprinkler heads mounted thereon with the boom being constructed of a plurality of articulately connected sections supported by electrically driven wheeled assemblies for propelling the boom in a circular path about a central standpipe. The boom is in the form of a truss construction, the articulate connections between the sections of the pipe are disposed interiorly of the flow path and the sections of the boom are retained in alignment in either direction of movement. An end gun is provided and cam operated to irrigate the normally missed corners of a square area and the lugged wheels on the supporting assemblies are timed so that the lugs track thereby providing less disturbance of the ground surface.

3,750,954

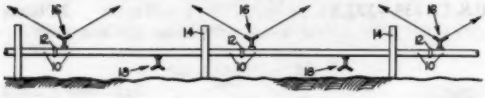
SPRINKLER SYSTEM AND ADAPTER VALVE THEREFOR

Leonard H. Williams, P.O. Box 233, Hermiston, Oreg.

Filed Apr. 27, 1972, Ser. No. 247,967

Int. Cl. B05b *3/18*

U.S. Cl. 239—178 **6 Claims**



An elongated assembly of interconnected irrigation pipes, supported at spaced intervals on wheels, is provided at longitudinally spaced intervals with a plurality of sprinkler heads which extend from the pipe alternately in opposite directions and are connected to the pipe each by an adapter valve arranged automatically to open those heads extending upwardly from the pipe and to close those heads extending downwardly from the pipe when the latter contains water under pressure, and also to open those heads extending downwardly from the pipe when the latter contains unpressurized water, whereby to effect drainage of the pipe.

3,750,955

SPRAY COATING APPARATUS

Susumu Nakai, Tokyo, and Tadanori Sameshima, Fujinomiya, both of Japan, assignors to Honshu Paper Company Limited, Tokyo, Japan

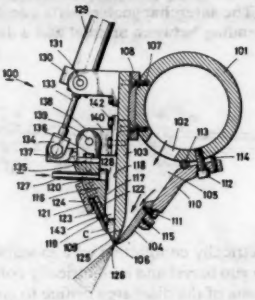
Filed June 23, 1972, Ser. No. 265,565

Claims priority, application Japan, Sept. 10, 1971, 46/69671

Int. Cl. F23d *11/16, 13/40, 15/00*

U.S. Cl. 239—420 **6 Claims**

Coating apparatus is disclosed which has a spray tip characteristic tailored to produce an atomized spray patter which is substantially triangular in cross section. This results in a coat distribution uniform particularly throughout a given width of a



substrate. Means are also provided to hold the spray tip wide open for maintenance purposes.

3,750,956

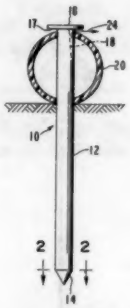
SPRINKLER UNIT

Gary J. Mastman, 5150 Graves Ave., San Jose, Calif.

Filed Nov. 15, 1971, Ser. No. 198,859

Int. Cl. A62c *31/22*

U.S. Cl. 239—272 **26 Claims**



An improved sprinkler for use with a hose capable of being pierced wherein the sprinkler is adapted to be driven into and through the hose so that a recess in the sprinkler places the interior of the hose in fluid communication with a region exteriorly thereof to allow water flowing through the hose to enter the recess and exit therefrom into the region. One form of the sprinkler includes a shaft having a slot in its outer surface for defining the recess. The slot can have any one of a number of different configurations. Another form of the sprinkler includes a shaft having a tubular segment having a fluid passage forming the recess. In both forms, the shaft is sufficiently long so that a part of the shaft is adapted to project outwardly from a hose and to be used to anchor the hose against movement when water flows through the hose.

3,750,957

TORCH FOR THERMOCHEMICAL PROCESSING OF WORK PIECES

Heinz Gabel, Frankfurt/Main; Hans Hirschberg, Altenhain/TS, and Gerhardt Lange, Frankfurt/Main, all of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Sept. 16, 1971, Ser. No. 181,150

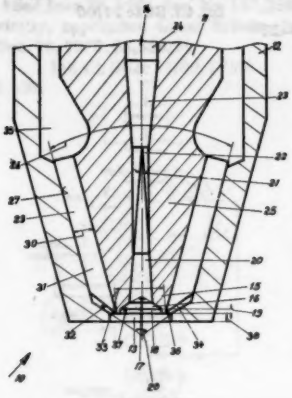
Claims priority, application Germany, Sept. 19, 1970, P 20 46 414.6

Int. Cl. B05b *7/00*

U.S. Cl. 239—424 **12 Claims**

A torch for the thermochemical processing of work pieces has at least one channel for the processing oxygen and at least

one channel for the fuel gas and heating oxygen mixture-components in the form of separate channels for the components or a single channel for the mixture. A common discharge



opening is provided for the various gases. The processing oxygen channel has a depression at its outlet with the depression being at an angle of 90°–150° and preferably 120°.

3,750,958

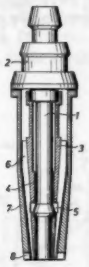
BURNER NOZZLE

Severin Haselmann, Bandhagen, Sweden, assignor to Aga A B, Lidingo, Sweden

Filed Oct. 7, 1971, Ser. No. 187,453

Int. Cl. F23d *11/16*

U.S. Cl. 239—419.3 **8 Claims**



A burner nozzle for cutting purposes and provided with channels conducting cutting gas, burner gas and heating gas. The cutting gas channel extends rectilinearly through the entire nozzle. One of the other channels is annularly formed around the cutting gas channel and is connected at the outlet end of the nozzle to an annular chamber. Said chamber is connected with a plurality of narrow channels being inclined or turned relative the axis of the nozzle. Said narrow channels are mainly intended for the burning gas and said annularly formed channel is intended for the heating gas. The burning and heating gases are mixed when the heating gas flows out from said annular chamber in said inclined or turned channels. The gas mixture is arranged to flow annularly out around the jet of cutting gas and form a heating flame.

3,750,959

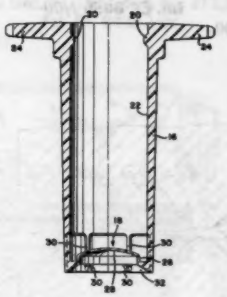
VALVE AND NOZZLE ASSEMBLY

Roy J. Weikert, c/o General Films Inc., Covington, Ohio

Filed June 19, 1972, Ser. No. 264,139

Int. Cl. F16k *31/524, 31/528*; B05b *1/32*

U.S. Cl. 239—539 **9 Claims**



A one piece valve for controlling flow through a tubular nozzle. The valve includes a tubular portion slidably engaging the outer wall of the tubular nozzle and a dome shaped closure member positioned concentrically within the tubular portion of the valve by means of a series of radially extending ribs. The inner wall of the tubular portion of the valve is provided with cam followers which engage in cam grooves or slots in the outer wall of the tubular nozzle so that rotating the valve about the nozzle by means of outwardly projecting arms will cause the valve to move axially of the nozzle to bring the dome shaped closure member into sealing contact with the inner wall of the nozzle adjacent its lower end. The dome shaped closure member curves upwardly into the nozzle so that there is an increase in sealing force in response to the weight of the fluid acting on the closure member.

3,750,960

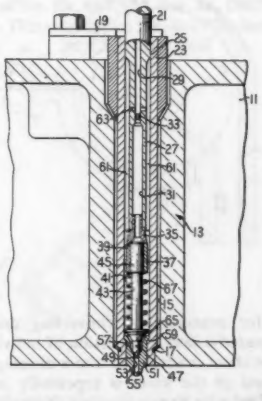
FUEL INJECTOR

John H. Back, Washington; Elling Z. Johnson, Dunlap; Stanley J. Kranc, Morton, and Robert D. McDowell, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 836,303, June 25, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,153

Int. Cl. B05b *1/30*

U.S. Cl. 239—533 **6 Claims**

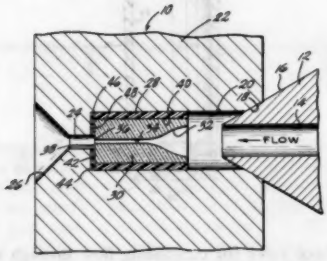


A fuel injector of the inwardly opening type wherein an end of the fuel line is utilized as an integral part of the injector.

3,750,961
VERY HIGH VELOCITY FLUID JET NOZZLES AND METHODS OF MAKING SAME

Norman C. Franz, Apt. 902, 4620 W. 10th Ave., Vancouver, British Columbia, Canada

Continuation of Ser. No. 875,726, Nov. 12, 1969, abandoned. This application July 16, 1971, Ser. No. 163,435
Int. Cl. B05b *1/00*
U.S. Cl. 239—600 15 Claims

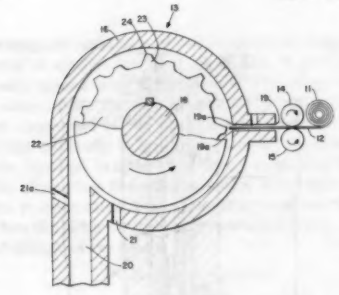


A very high velocity fluid jet nozzle comprised of a heavy walled vitreous body defining a jet orifice circular in cross section and substantially greater in length than the cross sectional diameter thereof, the orifice being defined by a smooth surface blending into an entry chamber defined by the vitreous body, the nozzle being made by a process including the steps of pressurizing the bore of a heavy walled vitreous capillary tube, softening a portion of the tube so as to form a chamber therein, and severing the tube at the chamber and at points spaced from the chamber.

3,750,962
DISINTEGRATION PROCESS FOR FIBROUS SHEET MATERIAL

George Morgan, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 22, 1971, Ser. No. 182,796
Int. Cl. B02c *13/08*
U.S. Cl. 241—18 9 Claims

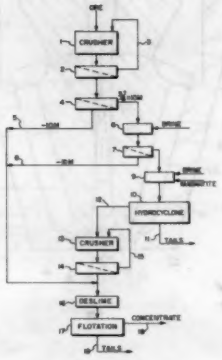


A process for continuously converting dried cellulosic fibrous sheet material into a dispersion of individual fibers in air. The fibrous sheet is advanced into a disintegrating device wherein the end of the sheet is repeatedly impacted at a predetermined velocity by one or more impacting elements at a critical distance from the support elements for the sheet. The fibrous sheet is entirely disintegrated into individual fibers at relatively high rates.

3,750,963
BENEFICATION OF A CLAY CONTAINING SYLVINITE ORE

William B. Dancy, Lakeland, Fla., assignor to International Minerals & Chemical Corporation, Libertyville, Ill.

Filed Oct. 2, 1970, Ser. No. 77,631
Int. Cl. B02c *21/00*
U.S. Cl. 241—20 12 Claims

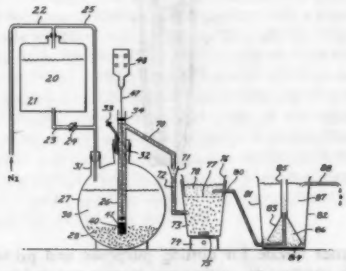


Coarse, unliberated, clay-containing sylvinite is subjected to gravity beneficiation to remove significant amounts of halite and clay. The sylvite-containing overflow, having a reduced clay content, may be comminuted and subjected to wet beneficiation.

3,750,964
ISOLATION AND FRACTIONATION OF ORGANS OF SMALL ANIMALS

Leonard H. Cohen, Abington; Alfred Zweidler, Elkins Park; William F. Hafner, Huntingdon Valley, and Robert J. Ellis, Philadelphia, all of Pa., assignors to The Institute for Cancer Research, Philadelphia, Pa.

Filed Sept. 28, 1971, Ser. No. 184,366
Int. Cl. B02c *18/10*
U.S. Cl. 241—29 14 Claims



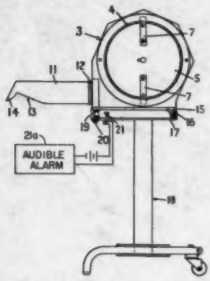
Methods and apparatus are described for isolation of diverse organs from small animals and fractionation thereof. The invention involves a continuous mechanical dissecting system, a centrifugal agitator for the separation of fibrillar from globular particles, and a settling chamber for the fractionation of organs at unit gravity with sedimentation velocities above the useful range for centrifugation. The invention is applicable to the isolation of polytene and non-polytene nuclei from larvae of Drosophila melanogaster (fruit fly) and is applicable to other small animals such as adult fruit flies or other insect larvae.

3,750,965

CRUSHING MACHINES FOR GLASS ARTICLES

John Madden, Leven, Scotland, and Hans-Jorgen Bye-Jorgensen, Gravesend, England, assignors to Robinson Sacks Limited, Fife, Scotland

Filed June 28, 1971, Ser. No. 157,259
Claims priority, application Great Britain, July 4, 1970, 32,501/70; Dec. 10, 1970, 58,650/70
Int. Cl. B02c *25/00, 13/00*
U.S. Cl. 241—36 9 Claims



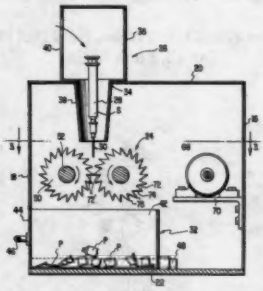
A machine for crushing elements such as glass bottles having a chute into which the bottles are fed to a rotor chamber for crushing. The crushed material is fed from the chamber by the action of the rotor along a substantially horizontal outlet spout extending tangentially from the chamber. The rotor has a three-fold action consisting of (a) crushing action (b) creating a suction action in the chute and (c) feeding the crushed material from the chamber.

3,750,966

SYRINGE DESTRUCTING DEVICE

Bryce P. Anderson, Berkeley, Calif., assignor to Control Products Corporation, Salt Lake City, Utah

Filed June 30, 1971, Ser. No. 158,469
Int. Cl. B02c *18/06, 13/20*
U.S. Cl. 241—99 4 Claims



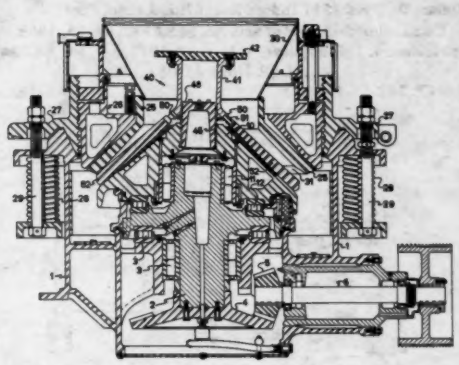
A syringe destructing device includes breaking means in the form of a pair of counter-rotating toothed rolls which fracture an unbroken syringe passing therethrough into a plurality of discrete pieces. The teeth on the rolls are of a unique, sharp-edged configuration and the rolls are disposed with respect to one another so that at the nip therebetween, a sharp edge on the tooth from one roll just contacts the sharp edge on the tooth on the opposite roll.

3,750,967

GYRATORY CRUSHER HAVING INTERCHANGEABLE HEAD MANTLES

Ronald B. DeDiemar, Brown Deer, and LeRoy J. Schuman, Milwaukee, both of Wis., assignors to Barker-Greene Company, Aurora, Ill.

Filed Dec. 27, 1971, Ser. No. 212,368
Int. Cl. B02c *2/04*
U.S. Cl. 241—207 5 Claims



A gyratory crusher having a generally conical crushing head rotatably mounted on an upright eccentric and which head cooperates with an annular concave to form a crushing chamber therebetween. A material hopper is located above the crushing chamber and acts to feed material downwardly into the crushing chamber. Interchangable mantles are provided for the top of the crushing head and thereby one common head is provided for various types of mantles that are used for fine or coarse crushing operations.

ERRATUM

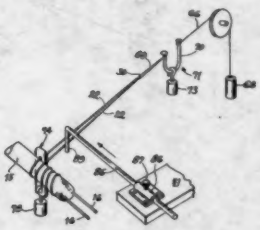
For Class 241—209 see:
Patent No. 3,750,809

3,750,968

ARTICLE WINDING DEVICE

Mitsuaki Mochizuki, Kobe; Minoru Tanaka, Akashi, and Tadataka Koyama, Takarazuka, all of Japan, assignors to Okazaki Manufacturing Company, Kobe, Japan

Division of Ser. No. 697,554, Dec. 26, 1967, Pat. No. 3,574,931. This application Jan. 8, 1970, Ser. No. 7,327
Int. Cl. H01c *17/00*
U.S. Cl. 242—7.15 3 Claims



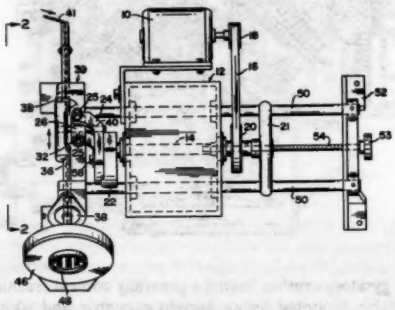
A pair of resistance wires are wound onto a take-up member by rotating the take-up, providing twist prevention and tensioning on the trailing end of the wire and axially spacing the turns being wound. The twist prevention and tension is maintained on the trailing wire end by a weighted U-shaped

member attached thereto. The spacing is achieved by supporting a hook-shaped member on one wire so that the wires pass on opposite sides of one of the legs of said hook-shaped member, the dimension of said leg being the desired pitch distance of the wire spacing plus the sum of the radii of the two wires.

3,750,969
COIL WINDING MACHINE

William B. Weis, 1511 Indian Rocks Rd., Largo, Fla.

Continuation-in-part of Ser. No. 865,878, Oct. 13, 1969, abandoned. This application Aug. 17, 1970, Ser. No. 64,294
Int. Cl. H02k *15/085*
U.S. Cl. 242—1.1 R 8 Claims

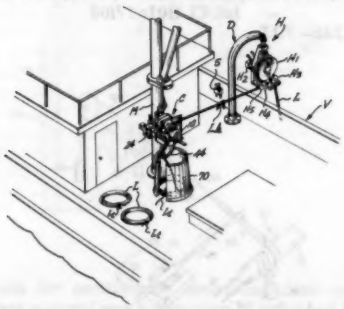


The apparatus for quickly, easily and accurately varying the configuration and plane of the elliptical path of the needle of a semi-automatic stator-coil winding machine. The machine includes a rotary movement section and an elliptical movement section arranged in cooperation with one another such that a rotary movement is translated into an elliptical movement to drive a wire-carrying needle about the perimeter of a stator-coil and thereby wind it. By varying the elliptical path of the needle, the apparatus of this invention substantially improves the capability of the machine to wind coils of different configurations.

3,750,970
LINE COILING APPARATUS

Olivier L. Tremoulet, Jr., Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Feb. 2, 1971, Ser. No. 111,971
Int. Cl. B65h *51/00*
U.S. Cl. 242—47 8 Claims

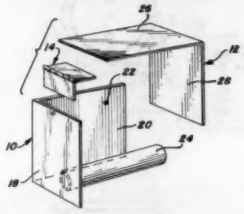


A crab trap warp line coiling mechanism is disclosed that can be operated conjunctively with line hauling mechanism. A chamfered presser wheel that wedges line into the V-shaped groove of the coiler's power driven sheave is mounted on a rocker arm operatively associated with interlock mechanism for the rotative slinger. A slip clutch for the drive connection to the slinger permits the slinger assembly to be stopped positively by the interlock when the presser wheel is raised without interrupting the driven rotation of the grooved sheave, and thereby safely permits removal and insertion of line through registered slots in the slinger and associated parts.

3,750,971
PAPER ROLL HOLDER

George Chevas, Chicago, Ill., assignor to John E. Pastuszynski and Grace Chevas, both of Chicago, Ill.

Filed June 1, 1972, Ser. No. 258,537
Int. Cl. B65h *19/04*
U.S. Cl. 242—55.3 13 Claims

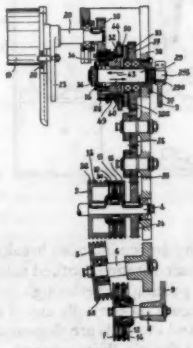


A paper roll holder comprised of a pair of generally identical right angled plate members, one member for mounting on a wall or the like and the other member being hinged to the one member for providing a cover for the holder as well as means to block removal of a paper roll from the holder. One angled plate member has a rear plate portion for securing to the wall and an end support plate portion protruding from the wall and having a rod-like paper roll holding member secured at one end thereof to one side of the end support plate portion. The second angled plate member has a top plate portion pivotally connected to the top edge of the end support plate portion of the first angled plate member for covering a roll of paper on the rod-like member, and an end plate portion depending downwardly from the top plate portion past the opposite end of the rod-like member to block removal of a roll of paper thereof but permitting removal of the paper roll simply by pivoting the second angled plate member upwardly.

3,750,972
AUTOMATIC TENSION REGULATION OF YARN AND WIRE WINDING DEVICES

Joannes Francis Marcel Bonnabaud, 23 rue Noelas, Roanne, and Claude Brat, 119 route de Vichy, Riorges, both of France

Filed Feb. 23, 1971, Ser. No. 118,111
Int. Cl. B65h *58/38*
U.S. Cl. 242—45 8 Claims



A device for regulating the tension of a yarn or an assembly of yarns, or wires, between a pulling capstan and a winding

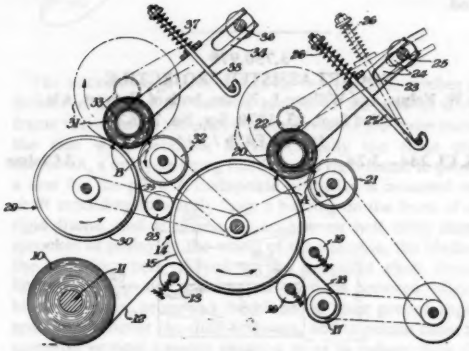
bobbin. The device is intended for avoiding the inconveniences resulting from sudden stoppages of the winding machine, the winding rate being controlled automatically by the yarn or wire tension through means adapted to modify accordingly the pressure of a friction coupling disposed between the pulling capstan and the winding bobbin.

3,750,973

MEANS AND METHOD OF WEB SLITTING AND WINDING

Gordon E. Walters, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 6, 1971, Ser. No. 131,614
Int. Cl. B65h *35/02, 23/10*
U.S. Cl. 242—56.2 **11 Claims**



A means and method for winding webs cut from sheet material into a compact and uniform rolls by constant contact with a pair of rotating members under a substantially uniform pressure. The roll during winding being associated with means for maintaining the roll in contact with the pair of rotating members and so that the roll axis of rotation elevates along a substantially straight line upon the accumulation of its convolutions. A tension is applied to the webs throughout travel from the slitting of the sheet material to the winding roll.

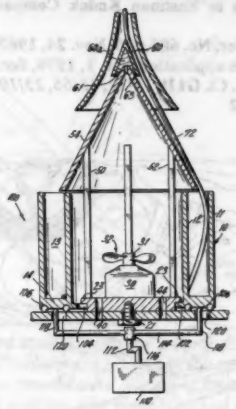
3,750,974

METHOD OF AND APPARATUS FOR WIRE RECEIVING AND STORING

James W. Dibrell, Malibu, Calif., assignor to Microwire Corporation, Allentown, Pa.

Continuation-in-part of Ser. No. 52,594, July 6, 1970, Pat. No. 3,656,701. This application Mar. 27, 1972, Ser. No. 238,353
Int. Cl. B21c *47/00*
U.S. Cl. 242—83 **18 Claims**

Wire to be wound and stored is drawn through a tube by the viscous drag of a flowing gas. The wire then is passed over a cone and an air stream having an angular component relative to the cone axis causes the wire to rotate over the cone surface. A storage container having an annular chamber is disposed adjacent the wide end of the cone, with the annular opening communicating with the wide end of the cone so that wire is deposited into and wound within the annular chamber.



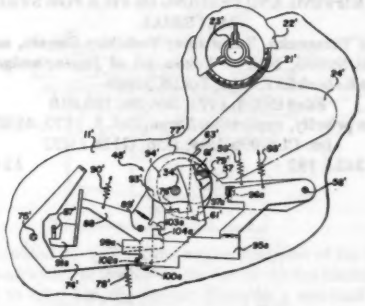
Various means are disclosed for acting upon the wire to wind it in a manner to prevent its becoming tangled.

3,750,975

CONTROL DEVICE FOR PROJECTOR FILM STRIPPING AND THREADING MECHANISM

Leslie J. Bunting, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1971, Ser. No. 136,803
Int. Cl. G03b *1/58;* **B65h** *25/28*
U.S. Cl. 242—192 **6 Claims**



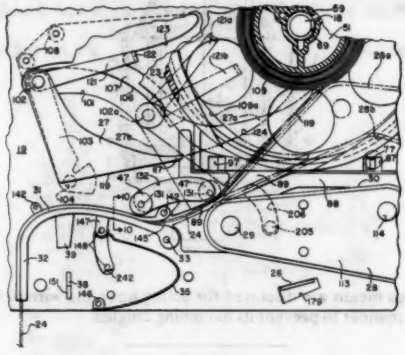
A self-threading motion picture projector includes a control device which latches a film stripping and threading mechanism of the projector in its active position wherein it is effective to feed film from a roll of film supported by the projector. When the leading end of the film has entered a film gate of the projector and has been engaged by a film-advancing member (which advances the film at a rate faster than the film stripping and threading mechanism), the control device is unlatched in response to the resulting tension of the film between the gate and the supply reel, thereby causing the stripping and threading mechanism to return to its inactive position so that the film can be projected. In the event the mechanism is moved to its active position when there is less than a minimum length of film on the supply reel (i.e., the film roll is of less than a minimum diameter), or if there is no supply reel on the projector, the control device will not latch the film stripping and threading mechanism in its active position.

3,750,976

CINEMATOGRAPHIC PROJECTORS OR THE LIKE AND CARTRIDGES FOR USE THEREWITH

John J. Bundschuh, and Robert J. Roman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 685,616, Nov. 24, 1967, Pat. No. 3,552,683. This application Apr. 1, 1970, Ser. No. 24,657
Int. Cl. G11b *15/32, 15/66, 23/10*
U.S. Cl. 242—192 11 Claims



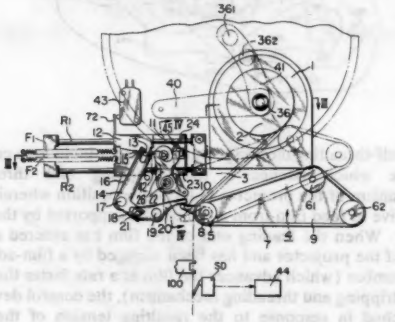
A machine such as a cinematographic projector is convertible to accommodate either a film supply cartridge or an unenclosed film supply reel, such conversion being automatically accompanied by corresponding change in the mode of operation of the machine.

3,750,977

STRIPPING AND FEEDING DEVICE FOR STRIP MATERIAL

Torakiyo Yamanaka, Yokohama; Yoshihiro Shigeta, and Kuniyoshi Suzaki, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1971, Ser. No. 186,010
Claims priority, application Japan, Oct. 5, 1970, 45/87360
Int. Cl. G03b *1/04, 1/56;* G11b *15/32*
U.S. Cl. 242—192 12 Claims



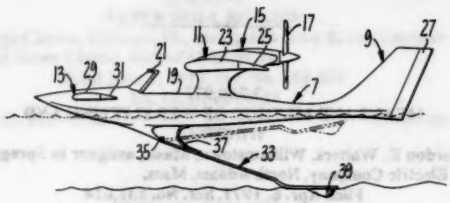
A cineprojector or similar device is provided with restraining means for controlling the entry of stripping means into a cartridge in use so as to ensure a strip material such as film to be smoothly stripped and threaded from a roll of such material irrespective of the variable size of the cartridge. Means for driving stripping means and threading means in association with each other is provided to simplify the operation of the device.

3,750,978

SKYBOAT

Byron H. Cunningham, 1013 Cedar St., Santa Cruz, Calif.

Filed Aug. 25, 1971, Ser. No. 174,653
Int. Cl. B64c *37/00*
U.S. Cl. 244—2 2 Claims



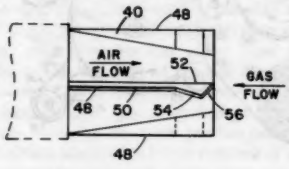
A skyboat is provided which consists of an airplane-like structure having limited lift wings and a trailing ski which is ordinarily in contact with water. A high speed, efficient, safe craft for the transportation of people and cargo is thus provided.

3,750,979

ROCKET ASSISTED PROJECTILE

Joe W. Nelms, and William L. Nelms, both of Harvest, Ala.

Filed Sept. 23, 1970, Ser. No. 74,622
Int. Cl. F42b *15/16*
U.S. Cl. 244—3.24 3 Claims



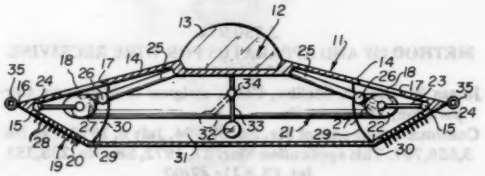
A rocket assisted projectile round consisting of a cartridge, a rocket motor and projectile wherein the cartridge propels the rocket motor out of a firing tube and ignites ignition powder in the rocket motor. Thereafter, the rocket motor is ignited and it propels the projectile in flight.

3,750,980

AIRCRAFT WITH VERTICAL TAKE OFF AND LANDING CAPABILITY

Samuel L. Edwards, 212 Prince St., Newark, N.J.

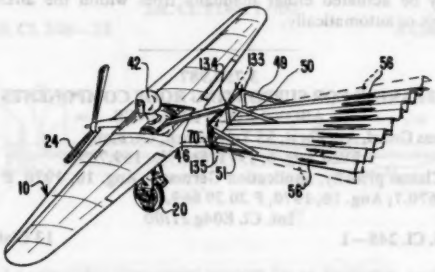
Filed June 30, 1970, Ser. No. 51,161
Int. Cl. B64c *17/02, 29/00*
U.S. Cl. 244—12 C 6 Claims



An aircraft with vertical landing and take off capability comprising a stator having a housing for control means as well as a cockpit for operational personnel and a turbine like rotor driven by reaction jets mounted on the stator, the turbine rotor having an air inlet on the upper surface of the stator and an air outlet on the bottom of the stator with means for

directionally deflecting the air outlet for control purposes; the stator also including weight means mounted along the vertical axis of the stator and displaceable radially from the vertical axis.

3,750,981
MAN-POWERED GLIDER AIRCRAFT
Alfred G. B. Prather, P.O. Box 53, Lanham, Md.
Filed Oct. 12, 1971, Ser. No. 188,289
Int. Cl. B64c *31/04*
U.S. Cl. 244—16 **4 Claims**

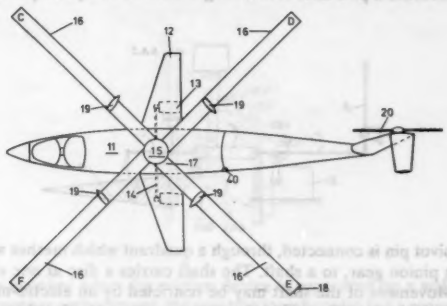


The aircraft wings have means for varying their camber and include a fan-like tail section hinged to the rear of a rigid frame surrounding the pilot's space between the inner ends of the side wing sections, in substantially the same plane therewith, a unicycle being fixed to said rigid frame to provide a seat for the pilot. A collapsible propeller is mounted on a shaft extending forwardly from a bearing on the front of said rigid frame, and is driven by a chain or belt drive from a sprocket or pulley on the wheel of the unicycle, the blades of the propeller being keyed to the propeller shaft through limited annular slot and key connections between adjacent blade bearings, to spread the blades to their proper angular spacing whenever the shaft is driven, and to return them to a common vertical hanging position so as to reduce their drag during gliding operations whenever no power is applied.

The pilot sits on the unicycle seat, drops a yoke harness over his shoulders which is operatively connected to control the inclination and twist of the hinged tail section, whereby the shifting of his body forward, lifts the tail section to cause an increase in the angle of attack of the side wing sections, and by shifting his body rearward the tail section is lowered to decrease the angle of attack, and if he moves his body from side to side he can twist the tail section accordingly. After placing this yoke over his shoulders, the pilot inserts his arms through openings in the inner ends of said wing sections and grasps the handles of the corresponding hand control plates which are operatively connected to control the cambers of the side wing sections, the warping of the outer ends of these sections and the spread of the fan-like tail section.

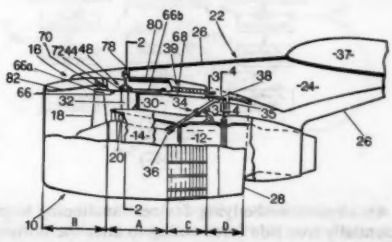
3,750,982
ROTARY WING AIRCRAFT
John Philip Gear, Cherryacre, Thornford, near Sherborne, England
Filed Jan. 28, 1972, Ser. No. 221,610
Claims priority, application Great Britain, Feb. 5, 1971, 4,011/71
Int. Cl. B64c *27/50*
U.S. Cl. 244—17.11 **10 Claims**

A means for folding a helicopter rotor blade includes a generally chordwise hinge located intermediate the root and tip ends of the blade, the outboard portion of the blade being rotatable about the hinge to a folded position in which it overlaps the inboard portion of the blade along at least part of its length. The hinge is formed in a generally cylindrical hollow member of aerofoil shape having leading and trailing sections and a rotatable central section. The inboard portion is secured to the leading and trailing sections, and the outboard portion is secured to the rotatable central section. A motor located in the hollow hinge, acting through a spline connection, rotates the central section relative to the leading and trailing sections.



An arm formed integral with the central section abuts a surface formed in the inboard portion of the rotor blade adjacent the hinge when the outboard portion of the rotor blade is in its fully extended position. The hinge is locked and unlocked by a ram which, when extended, locates through mating holes in the arm and the abutting surface.

3,750,983
GAS TURBINE DUCTED FAN ENGINES FOR AIRCRAFT
Geoffrey William Morris, Breaston, England, assignor to Rolls-Royce Limited, Derby, England
Filed Aug. 9, 1971, Ser. No. 169,971
Claims priority, application Great Britain, Aug. 11, 1970, 38,570/70
Int. Cl. B64d *27/12*
U.S. Cl. 244—54 **7 Claims**

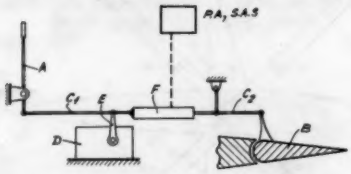


In a ducted fan gas turbine engine that part of the fan duct outer wall which extends over the tips of the fan blades, is connected to inter alia the fan air intake in a non-load bearing manner and is thus unaffected by way of deformation when the fan air intake is acted upon by adverse wind conditions. Thus, fouling of the fan blades is avoided. Moreover the fan intake outer wall can be made from relatively light materials.

3,750,984
MECHANICAL TRANSMISSION RELAY FOR A CONTROL FACILITY COMPRISING A MANUAL ELEMENT AND A SERVO-MOTOR, AND ITS USE IN AIRCRAFT CONTROL SYSTEMS
Henri Mouttet, Aix en Provence, and Gerard Lafortune, Marignane, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed May 11, 1972, Ser. No. 252,292
Claims priority, application France, May 18, 1971, 7117933
Int. Cl. B64c *13/18*
U.S. Cl. 244—76 R **12 Claims**

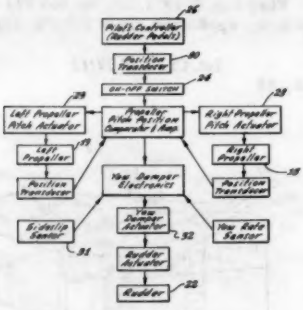
A relay, incorporated in a single box, and including a single torsion spring which provides a reaction force equal and op-

posite to forces applied to the relay so that play between the parts is eliminated. The relay is used in an aircraft control system, being connected by a link with a manual control element and a servo-motor. The servo-motor coacts with the relay and actuates a control surface of the aircraft. The relay includes a pivotable connecting link fixed to a pivot pin. The



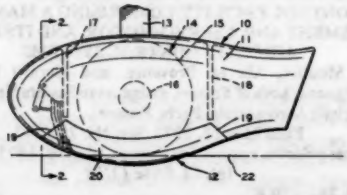
pivot pin is connected, through a quadrant which meshes with a pinion gear, to a shaft. The shaft carries a disc at one end. Movement of the shaft may be restricted by an electro-magnetic brake. The relay reacts to movement of either the manual control element or the central surface so as to provide a feel force for the pilot of the aircraft.

3,750,985
SIDE FORCE CONTROL DEVICES
Wilbert G. Wheldon, Palos Verdes Peninsula, Calif., assignor to Northrop Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 66,449, Aug. 24, 1970. This application Feb. 12, 1971, Ser. No. 114,818
Int. Cl. B64c *13/04*
U.S. Cl. 244—83 R **2 Claims**



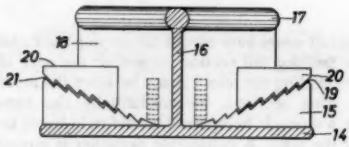
An airplane embodying devices functioning to provide an essentially true side force acting to alter the horizontal flight path of an airplane without sideslip and to avoid roll movements normally associated with maneuvers of this type.

3,750,986
AIRCRAFT PANTS STRUCTURE
James R. Bede, 355 Richmond Rd., Richmond Heights, Ohio
Filed Feb. 11, 1971, Ser. No. 114,658
Int. Cl. B64c *25/16*
U.S. Cl. 244—103 R **15 Claims**



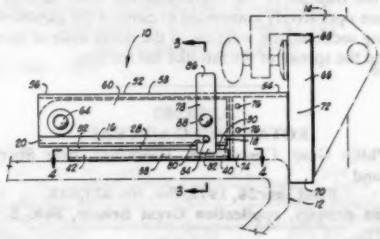
A wheel pants structure is provided for aircraft having landing gear including wheel and axle means which are supported in a substantially fixed position relative to the aircraft fuselage. The pants structure is in the form of a housing defined by fixed wall means having an opening therein adapted to be closed by a pair of pivotal door elements. The housing means including the fixed wall means and the door elements is adapted to completely enclose the wheel when the door elements are in the closed positions thereof. When the door means are moved to the open positions thereof, a portion of the wheel means is exposed for engagement with an underlying support surface for the aircraft. The door means may be moved between the open and closed positions thereof mechanically, electrically, hydraulically or pneumatically and may be actuated either manually from within the aircraft cabin or automatically.

3,750,987
BEARING FOR SUPPORTING ROOF COMPONENTS ABOVE ROOF CEILINGS
Klaus Gobel, Am Forst, 55 Trier-Irsch, Germany
Filed Aug. 6, 1971, Ser. No. 169,789
Claims priority, application Germany, Aug. 10, 1970, P 20 39 670.7; Aug. 10, 1970, P 20 39 669.4
Int. Cl. E04g *21/00*
U.S. Cl. 248—1 **13 Claims**



For supporting roof components, such as purlins or other roof bearers, above a ceiling, the invention provides a bearing comprising a base body which rests on the ceiling providing a plurality of inclined support surfaces, as well as individual support bodies each of wedge-like configuration providing a respective bearing surface resting upon the corresponding support surface, each support body being moveable upwardly on its support surface of the base body but being prevented from moving downwards in the opposite direction.

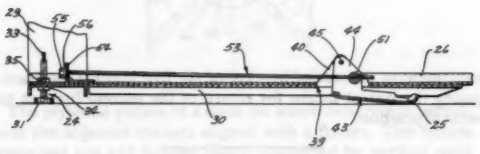
3,750,988
MOTOR MOUNT
Clifford R. Lyon, 8 W. 40th St., Sand Springs, Okla.
Filed May 25, 1972, Ser. No. 256,646
Int. Cl. B63b *17/00*
U.S. Cl. 248—4 **8 Claims**



A motor mount for securing an electric trolling motor or the like to the bow portion of a boat which includes a motor mounting plate secured to a folding frame structure. The folding frame structure is removably secured to the bow portion of the boat by means of a pair of mutually engageable wedge-type brackets fixedly secured respectively to the frame structure and the bow portion of the boat. A latch is carried by the

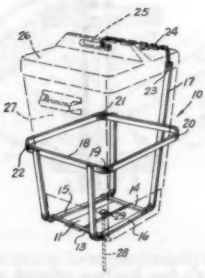
folding frame to secure the relatively movable members thereof in operating position. The motor mounting plate is sized such that it provides positive securement of the motor mount to the bow portion of the boat when the motor mount is latched in the operating position.

3,750,989
ADJUSTABLE APPLIANCE SUPPORT
Richard P. Bergeson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed July 19, 1971, Ser. No. 163,910
Int. Cl. F16m *11/00*
U.S. Cl. 248—23 **8 Claims**



An adjustable three-point support for an appliance, such as a built-in dishwasher, includes a pair of threaded legs adjacent the front of the appliance and an adjustable member disposed toward the rear thereof but adjustable from the front of the appliance for achieving a selective positioning and levelling of the appliance from the front of the appliance.

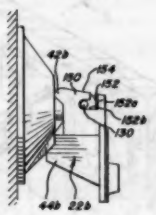
3,750,990
REFUSE CAN HOLDER
Miles H. Jacobs, Rt. 2, Glouster, Ohio
Filed July 15, 1971, Ser. No. 162,811
Int. Cl. F16m *13/00*
U.S. Cl. 248—146 **1 Claim**



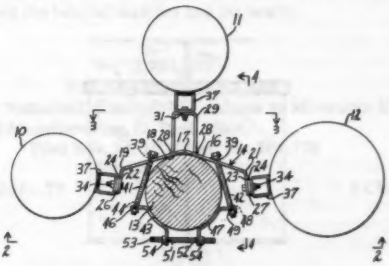
The present invention is directed to a refuse can holder which will support the refuse can in an upright position and has the top secured thereto by a flexible chain to prevent its loss. The holder is an open framework which encompasses the refuse can and is secured to the supporting surface by a spike driven into the ground or by a threaded fastener threaded into a socket in a concrete base.

3,750,991
SUCTION MOUNTING DEVICE
Meyer J. Ragir, 1375 Sheridan Rd., Highland Park, Ill.
Filed May 5, 1971, Ser. No. 140,386
Int. Cl. F16b *47/00*
U.S. Cl. 248—206 R **14 Claims**

A suction device including an elastic diaphragm and a camming lever pivoted on pins carried by a stem extending from the diaphragm with a reaction member interposed between the diaphragm and the lever. The pins are formed integral with the stem and the lever has a pair of arms located on opposite sides of the stem with the arms having L-shaped slots for receiving the pins. The lever also has a projection extending from an intermediate portion and the projection is in contacting engagement with an intermediate portion of the reaction member when the suction device is supported on a wall. In another embodiment, the reaction member also has a recess for receiving the projection to prevent relative movement between the lever and the reaction member when the device is attached to a flat surface.



3,750,992
TRANSFORMER MOUNTING ASSEMBLY
Eugene Johnson, 3626 5th Ave. South, Birmingham, Ala.
Filed June 26, 1972, Ser. No. 266,160
Int. Cl. F16m *13/02*
U.S. Cl. 248—221 **1 Claim**

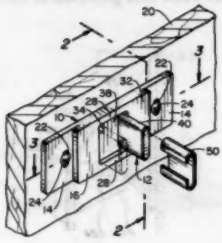


A transformer mounting assembly embodying a pair of horizontal band units adapted for attachment to a supporting pole in vertically spaced relation. Horizontally spaced adaptor plates are carried by the band units and have vertically spaced attaching means disposed to cooperate with differently spaced mounting lugs on transformers.

3,750,993
BRACKET ASSEMBLY FOR USE AS AN ADJUSTABLE REAR DRAWER SLIDE BRACKET AND THE LIKE
George Read, Glendora, Calif., assignor to Ajax Hardware Manufacturing Corporation, City of Industry, Calif.
Filed Jan. 24, 1972, Ser. No. 220,118
Int. Cl. A47b *88/00*
U.S. Cl. 248—298 **4 Claims**

A mounting member adapted for rearward mounting against a mounting surface has a longitudinally elongated, rectangular groove formed in a rearward surface opening rearwardly and a bracket opening of reduced longitudinal dimensions forwardly therethrough within the groove. A bracket member has a rectangular, rearward slide portion of reduced longitudinal dimensions slidably positioned in the mounting member groove with a bracket portion positioned projecting forwardly through the bracket opening of less longitudinal dimensions than the bracket opening to permit longitudinal

slideable movement of the bracket member within the mounting member groove. Selectively flexibly releasable, inter-engaged flanges project transversely between the bracket and



mounting member permitting and guiding the relative longitudinal movement therebetween while resisting rearward movement of the bracket member from the mounting member groove.

3,750,994

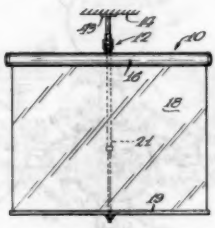
MOUNTING DEVICE FOR PROJECTION SCREEN

Hillard J. Bieschke, Itasca, Ill., assignor to Knox Manufacturing Company, Wood Dale, Ill.

Filed Feb. 24, 1972, Ser. No. 229,130

Int. Cl. G03b 21/56

U.S. Cl. 248—324 **5 Claims**



A mounting device for supporting a projection screen from a ceiling including a first bracket adapted to be secured to an overhead support, a second bracket adapted to be secured to a casing for a rollable projection screen, means mounting the second bracket on the first bracket for pivotal movement about a horizontal pivot axis, and cooperating detent means on the two brackets for permitting free pivotal movement of the second bracket on the first bracket and for supporting and positively holding the second bracket in angularly adjusted positions such that the screen is inclined from vertical to avoid dimensional distortion which occurs if an image is projected to a screen inclined to the path of projection.

3,750,995

MOUNTING DEVICE FOR PROJECTION SCREEN

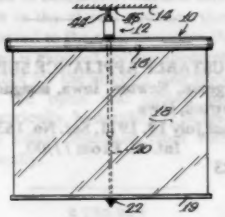
Horst Genger, Medinah, Ill., assignor to Knox Manufacturing Company, Wood Dale, Ill.

Filed Feb. 24, 1972, Ser. No. 229,131

Int. Cl. G03b 21/56

U.S. Cl. 248—324 **9 Claims**

A mounting device for supporting a projection screen in angularly adjusted positions inclined from vertical including a first bracket adapted to be secured to an overhead support, a second bracket adapted to be secured to a casing for a projection screen, means pivotally mounting the second bracket for adjustment on the first bracket, cooperating detent means on the two brackets for positively holding the second bracket in adjusted positions, and release means responsive to angular



movement of the second bracket on the first bracket for disengaging the detent means for return of the second bracket to vertical position.

3,750,996

DEVICE FOR SPACING SHEETING OF A CONSTRUCTION FORM

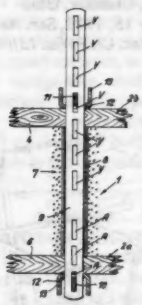
Josef Maier, Kreuzbuehlstr. 4, D 7611 Steinach, Germany

Continuation-in-part of Ser. No. 8,184, Feb. 3, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,649

Claims priority, application Germany, Apr. 3, 1967, P 16 84 356.4; Dec. 10, 1969, P 19 61 898.5

Int. Cl. E04g 17/08

U.S. Cl. 249—43 **10 Claims**



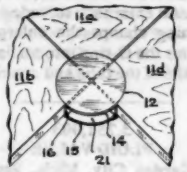
An arrangement for holding spaced opposite sheating boards of a construction form against movement away from each other during pouring of concrete or the like between the boards, in which an elongated metal strip extends between and with opposite ends beyond the boards. The strip is provided with a plurality of fixing holes arranged equally spaced from each other in the longitudinal direction of the strip and a plurality of elongated locking holes spaced from the fixing holes and from each other in the longitudinal direction of the strip. The arrangement includes further a first abutment means which abuts against the outer face of one of the boards and which includes a fixing member which may be a pin or a wedge driven into one of the fixing holes, whereas the second abutment means abuts against the outer face of the opposite board. The second abutment means includes a wedge driven in one of the elongated locking holes. The reference spacing of the fixing holes and that of the locking holes, the length of each locking hole and the wedge of the second abutment means are constructed and dimensioned in such a manner to assure that the opposite boards can be held against movement away from each other regardless of the desired spacing between the boards.

3,750,997

LOCKING RING FOR CORNERS OF PLYWOOD FORM PANELS

John S. Andersen, 2932 N. River Rd., River Grove, Ill., and Urban C. Lindquist, 1906 W. Argyle St., Chicago, Ill.

Filed Aug. 23, 1971, Ser. No. 173,901
Int. Cl. E04g 17/02
U.S. Cl. 249—47 2 Claims



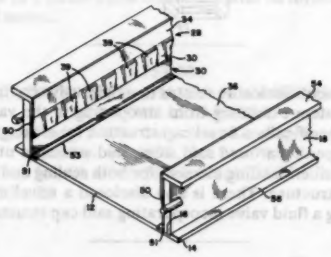
The plywood panels of a deck on which concrete is poured have the adjacent corners aligned with a fixture. This fixture comprises top and bottom plates connected by vertical webs and defines four pockets of a size to receive the four adjacent corners of four plywood panels and hold them aligned.

3,750,998

COMPOSITE FORM WITH LINER PLATES

Theodore W. Shoe, Fletcher, and Robert E. Smith, Kettering, both of Ohio, assignors to The Flexicore Co., Inc., Dayton, Ohio

Filed Dec. 13, 1971, Ser. No. 207,189
Int. Cl. B28b 7/06, 7/20
U.S. Cl. 249—50 4 Claims



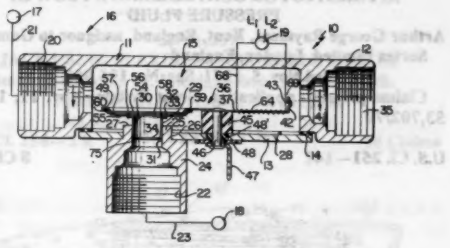
A composite slab casting form particularly adapted to resist the transverse deflection forces generated by the weight of concrete in the form. The base or pan of the form is constructed from a relatively thick, flat, plate member having a pair of longitudinally extending notches machined in its upper surface. A pair of relatively thin liner plates are bent about longitudinally extending axes to form base leg portions and side leg portions joined by a smoothly curved connecting section. The liner plates are mounted on the pan with the base leg portions thereof received in the notches. Longitudinally extending voids are defined by the inner ends of the base leg portions and opposing portions of the notches in the pan and these voids are filled with a welding material, which is thereafter ground to provide a smooth flat surface coplanar with the upper surface of the pan and the adjoining surface of the liner plate. In bending the liner plates to provide the base and side leg portions the base leg portions are formed long enough to space the above mentioned welding material far enough away from the connecting section that the welding material can be readily ground with conventional tools without gouging, undercutting or otherwise blemishing the surfaces of the form.

3,750,999

HEAT MOTOR OPERATED GAS VALVE CONSTRUCTION AND SYSTEM AND METHOD

Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 16, 1971, Ser. No. 199,254
Int. Cl. F16k 31/00
U.S. Cl. 251—11 7 Claims



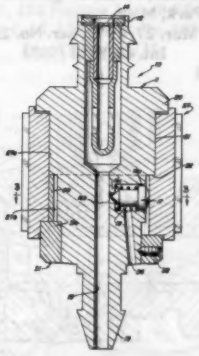
A heat motor operated gas valve construction having a housing for the passage of gaseous fuel therethrough and a bimetal member for operating a valve member of said housing and carrying an electrical heater that is utilized to cause warpage of the bimetal member to move the valve member to one operating position thereof when the heater is energized to heat the bimetal member. Means are disposed between the bimetal member and the electrical heater with such means not acting as a catalyst with the gaseous fuel to prevent the bimetal member when heated from acting as a catalyst with the gaseous fuel to "crack" the fuel and cause carbon to build up between the bimetal member and the heater.

3,751,000

VALVE CONSTRUCTION

Zygmunt Natkanski, Chicago, Ill., assignor to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Nov. 24, 1971, Ser. No. 201,778
Int. Cl. F16k 31/524
U.S. Cl. 251—77 4 Claims



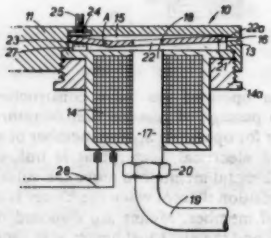
A valve construction is provided for use in manually controlling the flow of a fluid under pressure. The valve construction in question is particularly suitable for use in sphygmomanometer apparatus. The valve construction includes a hollow body member having an inlet and an outlet and a port formed in the body member and disposed intermediate said inlet and outlet. A closure piece is adjustably mounted on the body member for movement towards and away from a port-closing position. The closure piece is biased to assume a non-

closing position with respect to the port. A manually actuated means is adjustably mounted on the body member and is in sliding engagement with the closure piece to effect selective positioning of the latter with respect to the port. The manually actuated means is in continuous contact with the closure piece.

3,751,001
APPARATUS FOR CONTROLLING A FLOW OF PRESSURE FLUID

Arthur George Rayment, Kent, England, assignor to Gunson's Sortex Limited, London, England

Filed Nov. 5, 1971, Ser. No. 195,962
Claims priority, application Great Britain, Nov. 11, 1970, 53,702/70
Int. Cl. F16k *31/08*
U.S. Cl. 251—141 **8 Claims**

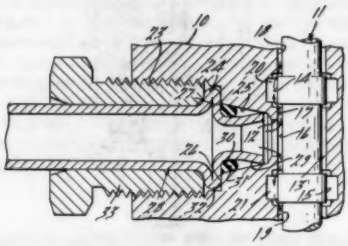


An electromagnetic valve for a sorting machine has a chamber in which there is a valve disc. The valve disc is urged to an open position by the energisation of a solenoid and in the open position pressure fluid may leave the chamber through an exit. In the closed position a portion ot the edge of the valve disc prevents flow of pressure fluid from the chamber. The valve disc may be replaced by a tubular member.

3,751,002
FLUID COUPLING FOR HIGH PRESSURE SPOOL VALVE HYDRAULIC POWER STEERING GEAR

Walter E. Folkerts; Hazel Park, and Reginald Y. Jamieson, all of Huntington Woods, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 27, 1972, Ser. No. 238,075
Int. Cl. F16l *19/02*
U.S. Cl. 251—148 **14 Claims**

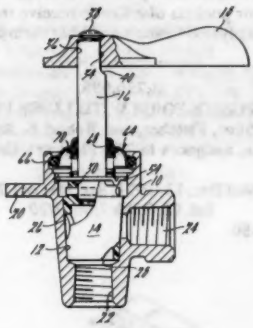


A valve housing for an automobile hydraulic power steering gear and integrated spool valve is provided with a tube receiving opening having a threaded outer portion, an annular coaxial pilot portion at the inner end of the threaded portion, and a coaxial conical guide portion converging inwardly from the pilot portion and opening axially into a transverse bore for a spool valve that controls operation of the gear. The outer end of the conical opening is of smaller diameter than the pilot opening and is defined by an annular clamping shoulder of the housing at the inner end of the pilot opening. A tube for conducting high pressure hydraulic fluid is provided with a radial enlargement spaced from its inner end. An O-ring is seated on the tube between the enlargement and a flared inner end of the tube. The flared end retains the O-ring on the tube until the coupling is assembled and also shields the O-ring from injury when the flared end is inserted into the tube receiving opening during the assembly and guided by the conical opening to a position whereat the annular enlargement seats at the clamping shoulder. An externally threaded nut engaged within the threaded opening clamps the enlargement against the shoulder and deforms the O-ring into sealing engagement with the adjacent sidewalls of the tube and concial guide opening.

3,751,003
FLUID VALVE

Gerald H. Kass, Garden City, Mich., assignor to Anderson Brass Company, Detroit, Mich.

Filed Sept. 24, 1971, Ser. No. 183,355
Int. Cl. F16k *5/04*
U.S. Cl. 251—312 **11 Claims**

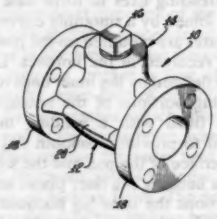


The present disclosure relates to a fluid valve having a valve actuating stem extending from an opening in the valve housing, and specifically a novel cap structure for closing and sealing said opening around said stem, said structure utilizing an annular resilient sealing element for both sealing and retaining said cap structure. There is also disclosed a novel method of assembling a fluid valve incorporating said cap structure.

3,751,004
FLANGED BODY WITH FLANGE REINFORCING RIBS

Robert W. Quirk, Los Angeles, Calif., assignor to Rheem Fluid Systems, Inc., Chatsworth, Calif.

Filed Dec. 17, 1971, Ser. No. 209,215
Int. Cl. F16k *27/00*
U.S. Cl. 251—366 **4 Claims**



A so-called filament wound article having an annular flange and a longitudinal rib buttressing the flange. The latter comprises one or more synthetic resin impregnated, helical

windings of fiber glass roving, tape, or the like. Rib reinforcing elements of similar materials are embedded in and extend lengthwise of the rib and have ends interspersed with and entangled with the flange reinforcing windings. Thus, the reinforcing elements of the rib and the flange are mechanically interlocked for increased strength.

3,751,005

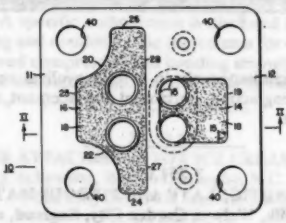
POWDERED METAL VALVE PLATE ASSEMBLY

Robert W. Earley, Worthington, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 30, 1971, Ser. No. 203,299

Int. Cl. F16k *51/00, 27/00*

U.S. Cl. 251—368 **3 Claims**



The invention provides a substantially impervious molded sintered iron valve plate arrangement wherein both sides of the valve plate include inwardly relieved surfaces and generally planar outwardly disposed surfaces. The outwardly disposed surfaces are ground flat for properly seating gasketing material thereon. The gasketing material maintains the machined area impervious, while the inwardly disposed surfaces have an outer impervious layer formed by subjecting the valve plate to a steam oxide treatment after its formation from powdered metal.

3,751,006

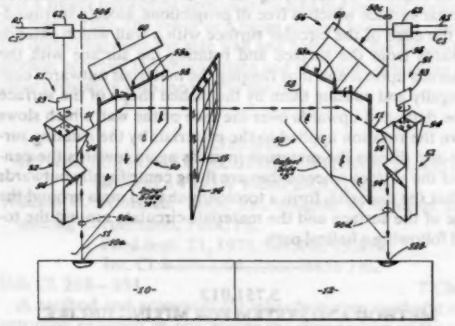
RANDOM ACCESS TIME-SHARED MICROFORM IMAGE RECOVERY APPARATUS

Leonard Jack Craig, 204 S. Anita Ave., Los Angeles, Calif.

Filed Oct. 12, 1970, Ser. No. 79,884

Int. Cl. G03b *23/02, 23/08, 21/28*

U.S. Cl. 353—25 **8 Claims**



A plurality of random access microform recovery units holding a plurality of separate transparencies in a non-reading position, each transparency at a different serial position along a reading path for light. Each transparency has at least one image for modulating light. A collimated beam of light is directed along the reading path and the path may be moved to a desired one of a plurality of parallel path positions when the transparency contains more than one image. A carrier selectively moves any one of the transparencies at its respective serial position into a reading position wherein the image thereon modulates the light beam. The modulated light beam impinges on a radiation sensor and the image is reproduced thereby as an electronic image signal. The image signal is retained in a buffer channel for conversion to visual information. A plurality of input/output stations are used to provide for a time-sharing of the random access recovery unit.

3,751,007

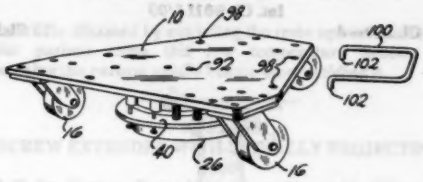
JACK USING FLEXIBLE EXPANSIBLE MOTOR

Charles Hollerith, 715 W. Michigan Ave., Jackson, Mich.

Filed Dec. 27, 1971, Ser. No. 211,908

Int. Cl. B60p *1/60*; **B66f** *3/24, 5/04*

U.S. Cl. 254—2 R **10 Claims**



A portable jack using an expansible motor having a flexible wall wherein the jack consists of a frame mounted upon wheels. A casing or assembly is mounted upon the underside of the frame intermediate the frame and the floor, and houses the expansible motor which is supplied with a pressurized medium through a hose or the like. Pressurization of the expansible motor causes a lower portion of the casing or assembly to extend downwardly to engage the floor and raise the frame relative thereto. The expansible motor operation may utilize both hydraulic fluid and compressed air, and a pair of expansible motors may be utilized in parallel to increase the jack lifting capacity.

3,751,008

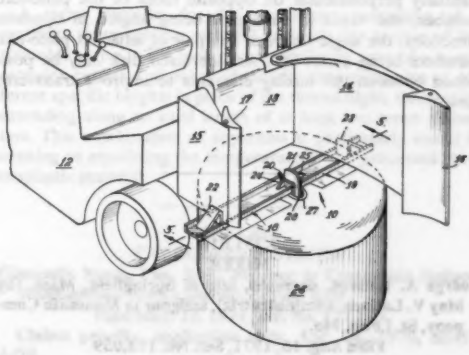
APPARATUS FOR RESTORING DAMAGED PAPER ROLLS

Newman W. McNatt, 226 Paulsen Ave., Battle Creek, Mich.

Filed Oct. 14, 1971, Ser. No. 189,221

Int. Cl. B66f *3/38*

U.S. Cl. 254—134 **10 Claims**



An apparatus is provided for salvaging large paper rolls having a tubular core at the axis thereof, which rolls have been damaged through accidental mishandling and which have thereby become distorted with the central core flattened to such an extent that a suitable roll mounting and supporting mandrel with tapered spools cannot be inserted therein, said

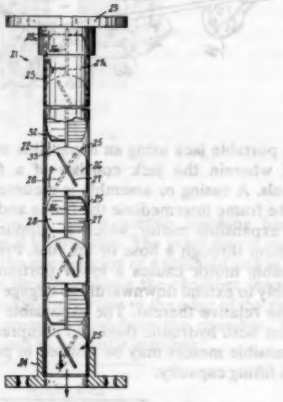
apparatus comprising in combination a pair of retracting members each having a core engaging member affixed to one end thereof and means at the other end thereof adapted to be engaged by the arms of a hydraulically operated lift truck designed for handling large paper rolls. The force applied to the retracting members by the clamping members of the lift truck causes the core engaging members to straighten the core substantially into its original circular form.

3,751,009

MOTIONLESS MIXING DEVICE

Stephen V. Archer, Hamden, Conn., assignor to Joseph P. McHugh, Hamden, Conn.

Filed Mar. 2, 1972, Ser. No. 231,140
Int. Cl. B01f *5/00*
U.S. Cl. 259—4 **13 Claims**



A motionless mixing device in which a hollow, cylindrical tube has fixedly positioned within the tube a plurality of mixing elements in end-to-end contact, wherein each mixing element comprises a flat, generally rectangular plate-like member having a pair of flat, plate-like vanes mounted substantially perpendicular on opposite faces of the plate-like member, the vanes in each pair being angled in opposite directions, the angle between any pair of adjacent plate-like members being about 90°. An apertured disk may be positioned between the mixing elements to improve transverse flow.

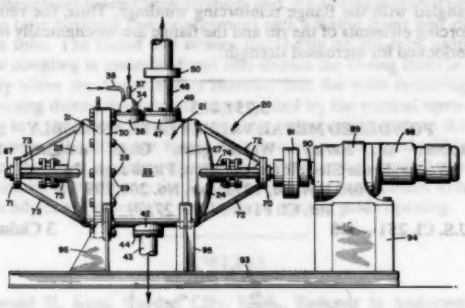
3,751,010

MIXER

George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,059
Int. Cl. B01f *7/04*
U.S. Cl. 259—9 **14 Claims**

A housing and paddle assembly adapted for use in processing and mixing highly viscous fluids is provided. The mixer employs a paddle assembly which rotates about a horizontal axis and which has at least one pair of diametrically opposed axially extending blade members which are slotted at diagonally opposite outside ends. In operation, the paddle assembly can sweep out substantially all of the housing interior



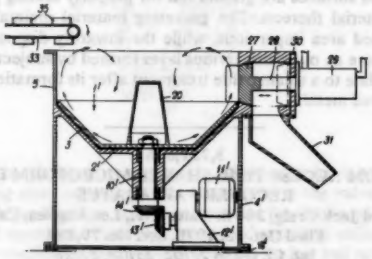
and produce simultaneously in a fluid cyclical vertical displacement, rolling action, horizontal displacement, and, even, fold over action.

3,751,011

MIXING OF PARTICULATE AND FIBROUS MATERIALS

Rudolf F. L. Milik, Welwyn Garden City, England, assignor to Design Link, Hertfordshire, England

Filed Jan. 24, 1972, Ser. No. 220,421
Int. Cl. B28c *5/06*
U.S. Cl. 259—146 **5 Claims**



Two or more materials, at least one of which is fibrous are mixed together by supplying the materials onto a dish-shaped circular surface which is free of projections, closely surrounding the edge of the circular surface with a wall which extends upwards from the surface and rotating the surface with the materials upon it and thus flinging the materials outwards centrifugally and causing them by the dished shape of the surface to be deflected upwards over the face of the wall which slows down the rotation applied to the materials by the rotating surface and directs the materials inwards again towards the centre of the surface whence they are flung centrifugally outwards so that the materials form a toroidally shaped mass around the edge of the surface and the materials circulate around the toroid following a helical path.

3,751,012

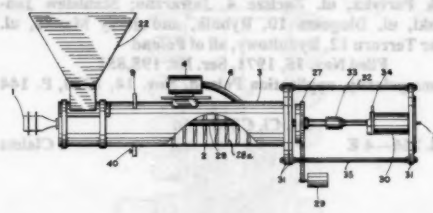
METHOD AND SYSTEM FOR MIXING UNLIKE INGREDIENTS

Hildegard M. Michenko, Reynoldsburg, and Hubert Thomas Tyler, Columbus, both of Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed June 29, 1970, Ser. No. 50,048
Int. Cl. B28c *5/18*; B01f *11/02*
U.S. Cl. 259—148 **16 Claims**

A batching or mixing apparatus and process for combining in an unhomogenous mix the several ingredients through the

simultaneous application of high and low frequency excitation. The high frequency excitation includes a sonic resonant electromechanical transducer impact coupled to a rotating auger shaft. The auger is of a specific design to permit the



maximum application of the high frequency excitation to the mixture. A specific embodiment is disclosed for the continuous mixing and combining the ingredients for concrete having an improved compressive and bonding strength and a finished surface for sealing against penetration of liquids.

3,751,013

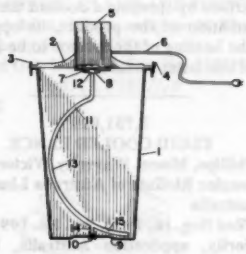
MIXER ATTACHMENT FOR ICE CREAM FREEZER

Clarence J. Schroeder, Box 660, Murphy, N.C.

Filed May 24, 1972, Ser. No. 256,398

Int. Cl. B01f *7/16*

U.S. Cl. 259—185 **1 Claim**



An agitator or stirrer adapted for use in a home ice cream freezer to mix bread dough and the like which consists of a curved length of rod having an angular fitting at its upper end to be engaged and driven by the driving socket of the freezer and a finger projecting downwardly into the bearing socket of the freezer tub, the lower end being shaped to extend close to the corner between the side wall and bottom of the tub and the portion between the upper fitting and the finger extending into close proximity with the wall of the tub.

3,751,014

APPARATUS FOR EXTRUDING SYNTHETIC PLASTIC RESINS AT LOW TEMPERATURES

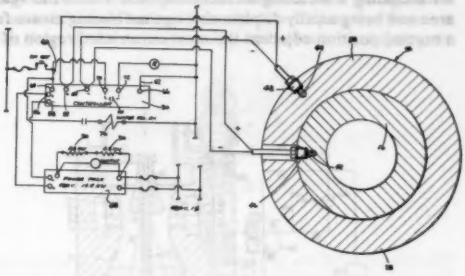
William C. Waterloo, York, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Sept. 21, 1970, Ser. No. 73,870

Int. Cl. B29b *1/06, 3/00;* H05b *1/02*

U.S. Cl. 259—191 **7 Claims**

A method and apparatus for manufacturing synthetic resin extrusion products by controlling the temperature of the resin to within ±10°F. of a desired point as it is formed into a homogeneous mass and extruded. This control is accomplished by providing one temperature sensing thermocouple in the barrel of the extruder, another temperature sensing thermocouple in the heating/cooling jacket mounted on the outside of the barrel, and by providing electrical control circuitry which averages the temperature readings of the two thermocouples and controls the supply of energy to the heating/cooling jacket in accordance with the difference between that average and the desired temperature to which the controller is set. Included as well is the novel synthetic resin extru-



sion article obtained by extruding the resin upwardly into a tubular parison using this low temperature process and stretching the parison axially before blow molding it.

3,751,015

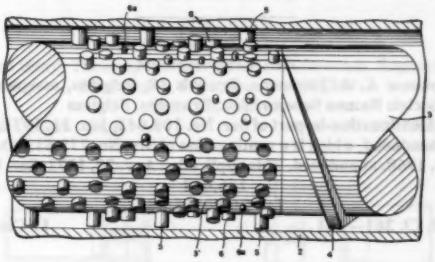
SCREW EXTRUDER WITH RADIALLY PROJECTING PINS

Friedhelm Hensen, Remscheid; Hans Siemetzki, Hilgen, and Egon Gathmann, Huckeswagen, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed June 22, 1971, Ser. No. 155,458

Int. Cl. B29f *3/01;* B29b *1/06*

U.S. Cl. 259—191 **10 Claims**



A screw extruder for the continuous processing of a synthetic thermoplastic material in which one section of the rotatable screw in the metering or discharge zone of a barrel extruder carries a plurality of radially projecting pins of different specific heights in place of the thread flight, this section extending along an axial length of at least two screw diameters. This combination of apparatus is particularly useful in evening or equalizing the temperature of the processed thermoplastic material.

3,751,016

CARBURETION SYSTEM

Giancarlo Nardi, Pisa, Italy, assignor to Compagnia Italiana Westinghouse Freni e Segnali, Torino, Italy

Filed Mar. 23, 1971, Ser. No. 127,153

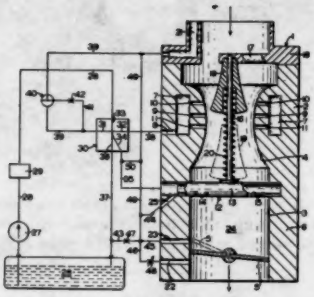
Claims priority, application Italy, Apr. 24, 1970, 68417 A/70

Int. Cl. F02m *69/04*

U.S. Cl. 261—36 A **8 Claims**

A carburetion system including a carburetor with a venturi in the air intake passageway thereof and a fuel nozzle opening thereinto downstream of the venturi, a fluidic regulator device for effecting fuel delivery from a fuel tank to said fuel nozzle

for injection into said intake passageway at a rate according to a pressure differential between atmospheric pressure and a venturi induced pressure in the intake passage impressed across the control inputs of the regulator device, said carburetor including a metering element disposed within the venturi area and being axially displaceable against biasing means from a normal position adjacent the most constricted region of the



venturi throat toward the least constricted region by dynamic action of intake air flow through the intake passageway, the degree of such dynamic action and, therefore, the amount of such axial displacement of said metering element being determined by the extent to which a throttle valve disposed in the intake passageway downstream of the venturi is opened, thereby proportionally modifying the effect of pressure differential across the input controls of the regulator device.

3,751,017

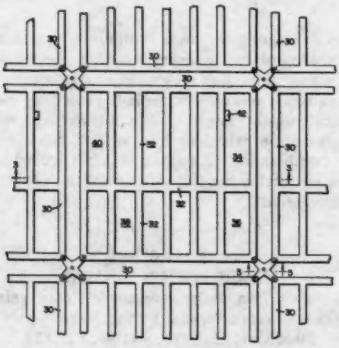
COOLING TOWER

Alphonse A. A. Lemmens, Brussels 18, Belgium, assignor to Societe Hamon Sobelco, S.A., Bruxelles, Belgium

Continuation-in-part of Ser. No. 108,642, Jan. 21, 1971, abandoned, which is a continuation of Ser. No. 771,513, Oct. 29, 1968, abandoned. This application Apr. 23, 1971, Ser. No. 136,668

Int. Cl. B01f *3/04*

U.S. Cl. 261—111 **11 Claims**



A cooling tower employing a plurality of vertically arrayed reticulate frame elements formed of laths. Water falls on the various tiers and is contacted by air flowing generally upwardly and/or transversely. Rotation of the frames yields different fall/flow patterns.

3,751,018

METHOD OF BAND-SYSTEM HARDENING OF THIN-WALLED STEEL PRODUCTS, PARTICULARLY OF SCRAPER CONVEYOR TROUGHS, AND THE DEVICE FOR IMPLEMENTATION OF THIS METHOD

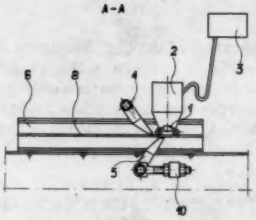
Henryk Partyka, ul. Zacisze 4, Jawarzno; Stanislaw Jankowski, ul. Dlugosza 10, Rybnik, and Jerzy Manka, ul. Ofiar Terroru 12, Rydultowy, all of Poland

Filed Nov. 15, 1971, Ser. No. 198,851

Claims priority, application Poland, Nov. 14, 1970, P. 144 422

Int. Cl. C21d *1/66*

U.S. Cl. 266—4 E **6 Claims**



A thin-walled steel product such as a conveyor trough is hardened in a surface thereof by means of heat-treatment. The heat-treatment comprises heating the surface to be hardened progressively in a longitudinal band thereof and progressively cooling the surface by spraying a coolant thereon. In order to prevent deformation of the product, its opposite surface is cooled after the heating of the surface to be hardened but before cooling of this latter surface.

3,751,019

FLUID COOLED LANCE

Kein James Phillips, Mount Waverley, Victoria, Australia, assignor to Conzinc Riotinto of Australia Limited, Melbourne, Victoria, Australia

Filed Nov. 16, 1971, Ser. No. 199,134

Claims priority, application Australia, Nov. 19, 1970, 3251/70

Int. Cl. C21c *5/32*

U.S. Cl. 266—34 L **23 Claims**

Fluid cooled lance formed of composite refractory and metal for conveying oxygen-containing or other gases, with or without entrained solids, into or onto molten baths, including a heat and corrosion-resistant nozzle in the lance adapted to provide a localized increase in the gas delivered from the lance. The lance also includes a plurality of individual small diameter pipes facilitating increased resistance to operating stresses, providing an increased cooling surface, and allowing for the reduction of its external refractory envelope.

3,751,020

SHOCK ABSORBER

Giles A. Kendall, Burbank, Calif., and William D. Wallace, Chicago, Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.

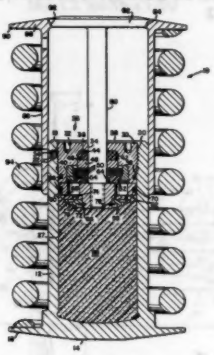
Filed Apr. 9, 1971, Ser. No. 132,858

Int. Cl. B60g *11/52*

U.S. Cl. 267—33 **3 Claims**

A shock absorber having a pressure cylinder defining a chamber, in which a piston assembly connected to a piston rod

is movable, and which is incompletely occupied by a compressible solid so that air space is present. The piston assembly is movable in the chamber to the extent of the air space unre-



sisted by the compressible solid during short strokes of the piston rod, but is resisted by the compressible solid during long strokes of the piston rod.

3,751,021

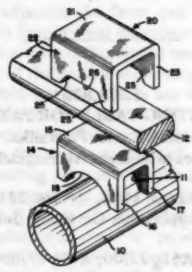
LEAF SPRING CLAMP AND SUPPORT

Alan D. Foster, Adrian, Mich., assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed Oct. 12, 1971, Ser. No. 188,153

Int. Cl. F16f 1/26

U.S. Cl. 267—52 **7 Claims**



A leaf spring for use with a mobile home or the like is clamped between an axle pad and a top pad of generally U-shaped cross-sectional configuration. The sides of the top pad overlap the axle pad, and the parts are welded together while retained under a substantial preload force to form a permanent spring support. The axle pad is then suitably mounted on the axle.

3,751,022

MOTORCYCLE SUSPENSION DEVICE

Giuseppe Bertelli, Bologna, Italy, assignor to S.E.B.A.C. S.p.A., Bologna, Italy

Filed June 14, 1971, Ser. No. 152,811

Claims priority, application Italy, Jan. 21, 1971, 3314 A/71

Int. Cl. F16f 5/00

U.S. Cl. 267—60 **2 Claims**

An inexpensive suspension device for motorcycles, motorbikes and the like. A spring has externally threaded centers made of molded synthetic resin threaded axially into opposite ends of the spring. Each spring center has an integral eye disposed axially outwardly of the spring for mounting the device. Synthetic resin sleeves are disposed on opposite ends of the spring circumferentially of the convolutions or spring coils on which the centers are threaded. A rod axially of the spring is fixed to one of the centers and the other spring center has an axial blind bore within which is disposed a sleeve in which the rod moves reciprocably as the device and spring are

variably loaded axially. The device is easily assembled by mounting the end sleeves on the respective centers and threading the center with the blind bore on one end of the spring and then threading on the other spring center on the opposite end. The axial rod then moves reciprocably in the sleeve in the blind bore as the device is variably loaded axially and the spring oscillates.

3,751,023

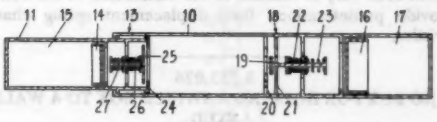
SUSPENSION DEVICES

John Henry Thomas, 2 Merriville Rd., Cheltenham, England

Filed Oct. 7, 1971, Ser. No. 187,314

Int. Cl. F16f 5/00

U.S. Cl. 267—64 R **11 Claims**



A suspension device comprises a pair of telescopically engaged members which define at least a pair of chambers which are reduced in volume as the members are moved inwardly relative to each other. One of the chambers is filled with a gas under pressure and the other chamber is filled with a liquid. Moreover, a valve assembly is provided which when the rate of closure of the members exceeds a predetermined value closes to increase the resistance to the closing movement of the members.

3,751,024

SHOCK AND VIBRATION DAMPER

Andre Lucien Pineau, 12 Rue de Bearn, 92 Saint Cloud, France

Filed Aug. 13, 1971, Ser. No. 171,423

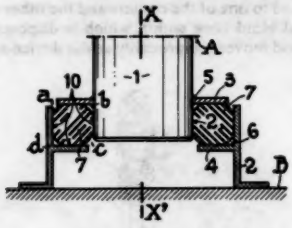
Claims priority, application France, Aug. 13, 1970, 7029833

Int. Cl. F16f 1/34

U.S. Cl. 267—153 **20 Claims**

Device for damping shocks and vibrations comprising a first member and a second member having a common axis and concentric with this axis. At least one annular series of elastomer elements or at least one toric elastomer element is

interposed between the members and surrounds said axis. The members define four faces which confine the elastomer elements or element in all directions. In the unstressed inoperative condition of the device, the element or elements have a curvilinear cross sectional shape. The element or elements may be hollow, solid or cellular.

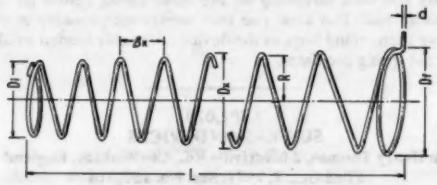


3,751,025

CONICAL SPRING

Jack Beery, Farmington; and Zong S. Luo, 1142 Byron, Plymouth, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1971, Ser. No. 194,704
Int. Cl. F16f 1/06
U.S. Cl. 267—166 2 Claims



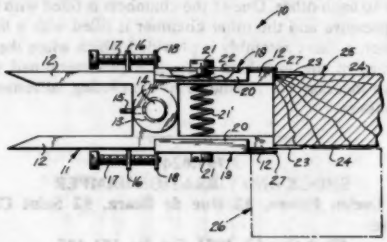
A conical spring is provided wherein the diameters of the coils thereof vary progressively, and the spaces separating adjacent coils vary in relation to the dimensions of the coils to provide predetermined force-displacement spring characteristics.

3,751,026

JIG BOX FOR HOLDING A SWITCH BOX TO A WALL STUD

Harold Stickney, 2108 "B" St., Garden City, Kans.

Filed Dec. 7, 1971, Ser. No. 205,512
Int. Cl. B23g 3/00
U.S. Cl. 269—97 1 Claim



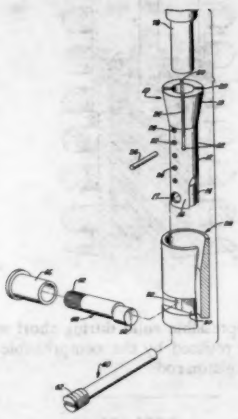
A tool device for gripping and holding a switch box to wall studding. This device consists primarily of a spring clamp member, the ends of which engages the interior of the box to be mounted to the stud. The device carries adjustable sliding plates so as to guage the depth of the box so that it is flush with the finished wall.

3,751,027

COLLET AND COLLET FIXTURE

Charles E. Giles, 3654 Overland, Los Angeles, Calif.

Filed Aug. 2, 1971, Ser. No. 168,106
Int. Cl. B25b 1/24; B23b 31/20
U.S. Cl. 269—152 1 Claim



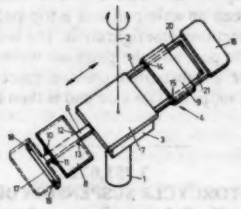
An improved collet and collet fixture provides an adjustable height for a work piece held in the collet so that the work piece may be held at the proper height. The collet is locked in position from the bottom by the fixture, thereby providing a secure location and holding of the collet and accurate machining of the work piece.

3,751,028

SUPPORTING TABLE FOR PATIENTS

Ludwig Scheininger, and Ernest Petersilka, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 3, 1972, Ser. No. 231,641
Claims priority, application Germany, July 22, 1971, P 21 36 754.4
Int. Cl. A61g 13/00; A47b 11/00, 1/02
U.S. Cl. 269—322 4 Claims



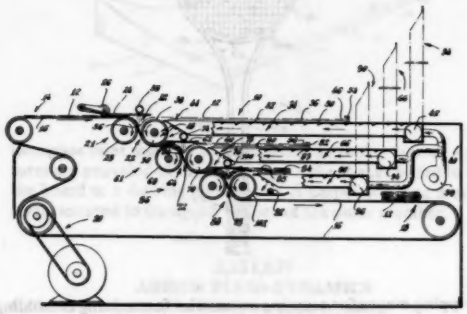
A support table for patients for use in X-ray technology has a plate mounted upon a support and a frame which is shaped partially as a central beam and partially as a double beam extending along the two longitudinal sides of the plate. The invention is particularly characterized in that the parts of the frame shaped as the central beam and the double beam are located upon the opposite sides of the support.

3,751,029

MULTI-LEVEL APPARATUS FOR FOLDING LARGE FLEXIBLE WEBS

Joseph John D'Angelo, 378 Annette Ct., Wyckoff, N.J.

Filed July 30, 1971, Ser. No. 167,652
Int. Cl. B65h *45/00*
U.S. Cl. 270—69 2 Claims



A multi-level apparatus for receiving a large flexible web, such as a large plastic bag, and folding it into multiple preselected segments in various configurations as may be desired. A plurality of conveyor decks are arranged in a stacked, spaced relationship relative to one another for sequentially receiving the flexible web which is to be folded. An adjustable actuator stop is associated with each conveyor deck for limiting the distance the leading portion of the web can advance along the deck, and conveyor means associated with each conveyor deck propels the flexible web therealong and into contact with the adjustable actuator stop. Counter-rotating elements positioned adjacent the front end of each conveyor deck in substantially longitudinal alignment with the top of the conveyor deck define a receiving slot to receive a pre-selected transverse segment of the flexible web along which it is desired to fold the web. Fold-starting means are included for urging the pre-selected transverse segment into the receiving slot. The adjustable actuator stop is operatively associated with the fold-starting means for actuation thereof, whereby upon engagement of the leading portion with the adjustable actuator stop, the transverse segment is urged into the receiving slot for initiating folding. A conveyor belt snakes between the counter-rotating elements and is arranged for contact therewith to convey the newly folding web therealong, the conveyor belt acting conjointly with the counterrotating elements to introduce a fold along a different preselected transverse segment of the flexible web at each receiving slot, whereby the flexible web may be folded into a plurality of segments of various sizes and configurations, as desired.

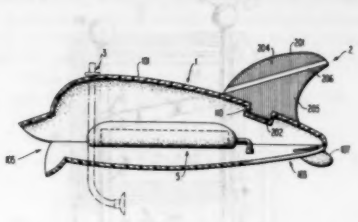
3,751,030

AQUATIC APPARATUS WITH BUOYANCY CONTROL STRUCTURE

Mary M. Winters, 3815 N.W. 193 Ter., Miami, Fla.

Filed Jan. 13, 1972, Ser. No. 217,528
Int. Cl. B63b *7/06*; A63g *31/00*
U.S. Cl. 272—1 B 10 Claims

A floatable-submersible aquatic apparatus including a substantially hollow shell exteriorly configured in the shape of an aquatic animal. The shell is provided with fore and aft ports to permit the free ingress and egress of water through the shell. The interior of the shell is provided with first and second buoyancy control members which are attached longitudinally along first and second lateral surfaces of the shell. Each control member includes a chamber which may be selectively filled with air through a valve. Inside of each chamber is positioned a block of floatable polystyrene material to maintain



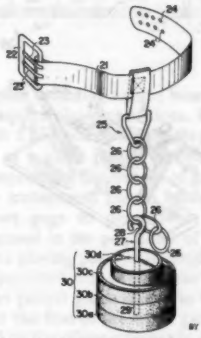
minimum buoyancy of the apparatus. The aquatic apparatus may also include a snorkel operably connectable through an upper and lower portion thereof.

3,751,031

WEIGHTED BELT TYPE EXCERCISING DEVICE

Noriyuki Yamauchi, 273, Hojo, Toyo-City, Ehima, Prefecture, Japan

Filed Sept. 22, 1970, Ser. No. 74,297
Claims priority, application Japan, Sept. 24, 1969, 44/91478; June 19, 1970, 45/52750; June 19, 1970, 45/52751
Int. Cl. A63b *21/18*
U.S. Cl. 272—57 R 1 Claim



This invention is used for exercising. The invention includes a plurality of weights that are removably attachable to a shaft which in turn is connected to a link chain. The chain has a loop portion on one end for attachment to a belt. The belt is releasably attachable to the waist of a user.

3,751,032

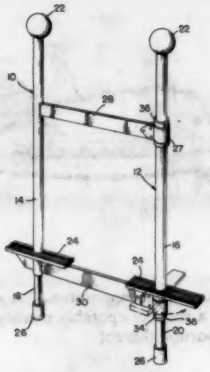
INTERCONNECTED JUMPING STICKS

John F. Boyle, Box 113, Pierceton, Ind.

Filed Feb. 22, 1972, Ser. No. 227,996
Int. Cl. A63b *25/08*
U.S. Cl. 272—57 E 3 Claims

A jumping stick arrangement in which two jumping sticks are arranged in parallel spaced relation and are intercon-

nected by a laterally extending frame so that two individuals can jump in unison. The laterally extending frame connecting



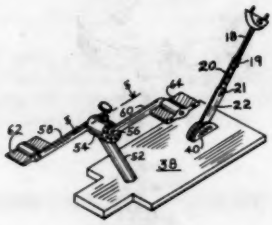
the jumping sticks can be arranged so as to permit one jumping stick to be moved in a circle at least part way around the other jumping stick.

3,751,033

COMBINATION OF A CHAIR AND PEDALING DEVICE

Walter Rosenthal, Schwedenschanze 15, 7780 Konstanz, Germany

Filed Dec. 15, 1971, Ser. No. 208,152
Int. Cl. A63b *21/22, 23/04*
U.S. Cl. 272—58 1 Claim



A combination of a chair and an advanceable and retractable pedaling device. The pedaling device is pivotally secured to the bottom of the chair by a telescoping member. The telescoping member with the pedaling device may be adjusted at a desired angle for comfortable pedaling. The length of the telescoping member may be varied to suit the length of an user's legs. An adjustable counterforce device is provided to vary the force desired applied by the user. The pedaling device may be locked in place out of the way, under the chair.

3,751,034

GAME RACKET

William E. Portz, and Eugene W. Flieger, both of Geneva, Ohio, assignors to True Temper Corporation, Cleveland, Ohio

Filed Nov. 2, 1970, Ser. No. 86,042
Int. Cl. A63b *51/00*
U.S. Cl. 273—73 D 13 Claims

A tubular structure for a tennis or like game racket is formed from modified metal tubular members arranged in a spaced oval relationship forming a racket portion. The modified tubular members include an annular recess and

gripping means for securing an annular formed ring or holding means to maintain the racket cross-strings permanently taut and in a spaced relationship.

3,751,035

SET OF GOLF IRONS

John W. Lockwood, 236 Playa del Norte, La Jolla, Calif.

Filed July 2, 1971, Ser. No. 159,133
Int. Cl. A63b *53/04*
U.S. Cl. 273—77 A 6 Claims

A set of golf club irons with heads having graduated loft angles, the striking faces being of the same size and elliptical shape so that the club head is balanced both vertically and horizontally about the center of the elliptical driving face, with a downwardly curved lower front edge to minimize the divot, and a recess in the rear face creates a sweet spot at the center of the striking face and a uniform distance from the lower front edge throughout the set of irons, the minimum thickness of metal at the sweet spot being also uniform throughout the set of irons since the recess is a spherical segment, above the sole of the head, having a constant radius with a center on a line through the center of the driving face and normal to the plane of the driving face. The psychological advantage in locating the sweet spot identically in identical driving faces is obvious since the user can more easily learn to use all the clubs of the set with heightened efficiency.

3,751,036

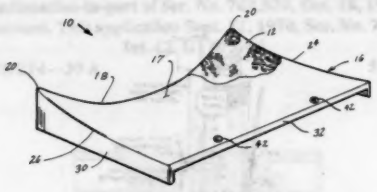
SHAKER BOARD FOR BOWLING PINSETTER

Harry C. Bockelman, 1902 S. Volutsia, Wichita, Kans.

Filed Mar. 20, 1972, Ser. No. 236,075
Int. Cl. A63d *5/00*
U.S. Cl. 273—43 R 4 Claims

A shaker board to receive and agitate the bowling pins and ball in the pit of a bowling alley. A frame having upwardly turned rear corner portions supports and shapes a sheet-like

outer member formed of fiberglass reinforced polyester resin or polyepoxite resin. Generally tetrahedral shaped compartments are formed in the upwardly turned corner portions of the outer member and these compartments are filled with a



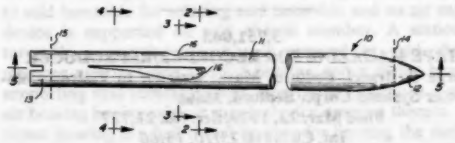
fiberglass filler material to strengthen the shaker board. Apertures are provided at the front edge of the shaker board to bolt the board to a shaking mechanism. A carpet covering is adhesively secured to the upper surface of the outer member.

3,751,037

ARROW FLUID-DYNAMICS

Calice G. Courneya, Rt. No. 3, Alexandria, Minn.

Filed Nov. 4, 1971, Ser. No. 195,554
Int. Cl. F41b 5/02
U.S. Cl. 273—106.5 C 7 Claims



Disclosed is a new means to cause rotation of a missile as it moves through a fluid, which means maintains the missile in alignment with its direction of movement through the fluid. The means consists essentially of fluid-dynamically spaced elongated depressions in the gross outer surface of at least some portion of the trailing half of the mass of the body part of the missile. These depressions are aligned on the gross outer surface within an angle not greater than 30° from the axis of missile rotation. Each depression has a maximum width and maximum depth less than the length thereof, and also less than the radius of the circumference generated by rotation of the body portion of the missile at the location of the depression. Further, these depressions have a greatest depth portion radially-displaced with respect to a lesser depth portion and this greatest depth portion is forward of the longitudinal midpoint of the depression. The depressions are especially effective to guide the flight of missiles such as arrows, and can be used to replace the normal feathers or fins on standard archery arrows. Each special depression, during transit of the missile through a fluid, creates a resultant fluid-dynamic composite force vector which lies in a line not intersecting the longitudinal axis of rotation of the missile, but passing laterally to that axis. The composite force vector line of each depression passes that axis on the same lateral side, thereby effecting rotation of the missile.

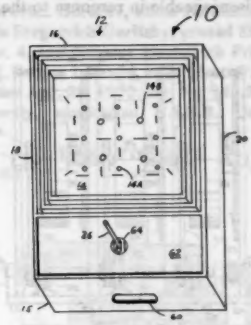
3,751,038

GIMBAL-MOUNTED GAME BOARD TILTABLE BY CONTROL STICK

Jack Victor O'Keefe, 726 W. Dempster St., Apt. H 204, Mt. Prospect, Ill.

Filed June 9, 1971, Ser. No. 151,319
Int. Cl. A64f 7/16
U.S. Cl. 273—110 3 Claims

A game device having a laterally and longitudinally tiltable platform manually manipulable by means of a control stick. Cooperating game boards which are removably mountable on said platform are provided with playing surfaces having raised



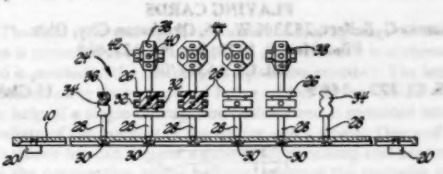
or recessed portions adapted to serve as obstacles or traps for ball-shaped playing members used therewith.

3,751,039

THREE-DIMENSIONAL BOARD GAME APPARATUS

Walter J. Dykoski, 9041 Hensley Dr., Sterling Heights, Mich.

Filed Dec. 3, 1971, Ser. No. 204,592
Int. Cl. A63f 3/02
U.S. Cl. 273—131 AC 14 Claims



Game apparatus including a game board having an eight-by-eight array of square playing positions. Each playing position is provided with a peg hole centrally thereof to accommodate a support peg of a game piece. Three games are disclosed, each game comprising a distinct set of game pieces. All game pieces include transparent plastic bodies and vertically depending support pegs to permit the game pieces to be removably disposed in the peg holes of the game board and moved from one playing position to another. In addition, each game piece is provided with at least one peg hole in the body thereof so as to permit game pieces to be stacked on top of one another. In the first of the three games, the game pieces may be stacked on top of one another in various angular orientations to accomplish an objective somewhat similar to a three-dimensional tic-tac-toe game. In the second game, the game pieces are simply vertically stacked on one another but are provided with directional programming indicators to provide an objective similar to that of the game of checkers but with additional complexity and variation. In the third game, the game pieces are provided in an assortment similar to the standard game of chess and the game objective is similar with the additional facet of game piece stacking and compounding of power.

3,751,040

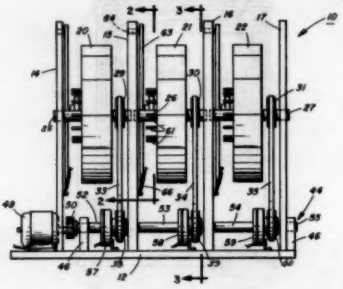
PLURAL ROTATABLE DRUM CHANCE DEVICE

William H. Carey, Keansburg, N.J., assignor to The Walk-In-Boys, Inc., Keansburg, N.J.

Filed May 28, 1971, Ser. No. 148,108
Int. Cl. A63f 5/04
U.S. Cl. 273—143 R 2 Claims

A power driven amusement wheel device having a plurality of wheels mounted on a base for independent rotation wherein

a power drive is selectively engageable and disengageable from the wheels and wherein a brake for retarding the rotational movement of each of the wheels is provided to be engageable and disengageable in response to the actuation and



deactuation of any one of a plurality of switches by users of the amusement wheel device. The device is controlled such that retardation of the rotational movement of the wheels cannot occur prior to the passage of a predetermined period of time after initial actuation of the power drive.

3,751,041

METHOD OF UTILIZING STANDARDIZED PUNCH CARDS AS PUNCH CODED AND VISUALLY MARKED PLAYING CARDS

Thomas G. Seifert, 2533 N.W. 56, Oklahoma City, Okla.

Filed Mar. 5, 1971, Ser. No. 121,469
Int. Cl. A63f *1/06*
U.S. Cl. 273—149 P **11 Claims**

The method of formation of playing cards from a standardized codable card which is readable with automated data processing equipment such that the playing cards may be more readily sorted and/or susceptible of game playing analysis through use of conventional computational equipment. The coded playing cards constructed in accordance with the invention are particularly suitable for use in duplicate bridge games, e.g., large-scale tournament competition, but the invention also contemplates more limited usage with provision of individual playing card deck sensing devices suitable for home use or casual play.

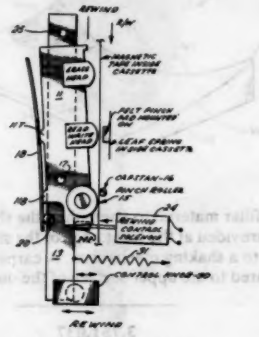
3,751,042

MAGNETIC TAPE TRANSPORT

John D. Platt, Claremont, Calif., assignor to MSI Data Corporation, Montclair, Calif.

Filed Jan. 6, 1971, Ser. No. 104,351
Int. Cl. G11b *21/00, 15/24*
U.S. Cl. 274—4 C **6 Claims**

A tape transport assembly for a cassette tape cartridge adapted for releasably mounting the cartridge for a transducing operation. A pivotal headplate is mounted on the base member adjacent to a capstan and carries a pinch roller and a transducer to allow the pinch roller to engage the capstan with the tape for advancing the tape from reel to reel when the plate is swung towards the capstan to effect a transducing operation. A radius arm is pivoted to the transport assembly and pivotally carries the head plate. The radius arm may be



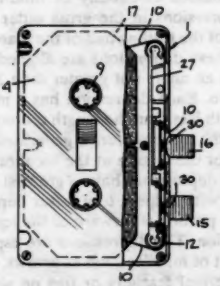
automatically controlled for moving it into engagement with a resilient mounting means for the head plate to pivot the radius arm and thereby the head plate to allow a tape rewind operation.

3,751,043

TAPE MAGAZINE FOR RECORDER/REPRODUCER

George T. Bracci, Bedford, Mass., assignor to Viatron Computer Systems Corp., Bedford, Mass.

Filed Mar. 23, 1970, Ser. No. 21,727
Int. Cl. G11b *23/10, 15/60*
U.S. Cl. 274—4 C **5 Claims**

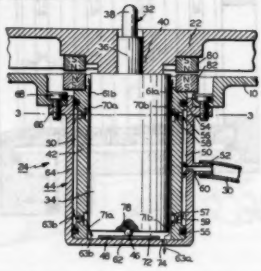


A magazine or cassette is disclosed of the type having a hollow case containing a magnetic recording tape arranged for being driven back and forth between spaced hubs positioned within the casing. The path of the tape from one hub to the other runs adjacent to one narrow sidewall of the case so that the tape is exposed to recorder/reproducer heads through one or more apertures in that sidewall. The magazine is adapted for high speed two directional multi-speed tape operation with digital or other computers and includes an improved low friction skew resisting tape mounting including a pair of low friction shim members positioned between the tape and the casing walls. The magazine is also adapted for hub drive of the tape in both directions within the casing and includes improved integral control devices on the casing for precision insertion and for protecting against double recording and against improper insertion of the magazine into the recorder/reproducer.

3,751,044
TURNTABLE SUPPORT FOR A RECORD PLAYER

Takehiko Sawada, Fukui-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Continuation-in-part of Ser. No. 768,830, Oct. 18, 1968, abandoned. This application Sept. 11, 1970, Ser. No. 71,315
Int. Cl. G11b *3/60*
U.S. Cl. 274—39 A 5 Claims

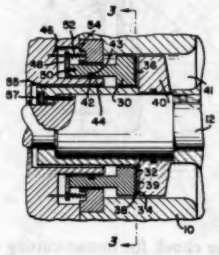


A record player having a stationary chassis member and turntable having a turntable shaft. A driving device is coupled to said turntable for rotating said turntable and an air supply device is supported on said chassis member. A stationary turntable supporting member is secured to said chassis member and includes a radial bearing and a thrust bearing supporting said turntable shaft. The radial bearing is a static air bearing having said air supply device coupled thereto. The thrust bearing is a ball thrust bearing for limiting the vertical displacement of said turntable, and is on the bottom of said turntable shaft. Said stationary turntable supporting member is provided with an exhaust port of predetermined size strategically placed at the bottom thereof.

3,751,045
FLUID SEAL

Herman Lindeboom, Pennington, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Mar. 19, 1970, Ser. No. 21,164
Int. Cl. F16j *15/34*
U.S. Cl. 277—27 5 Claims

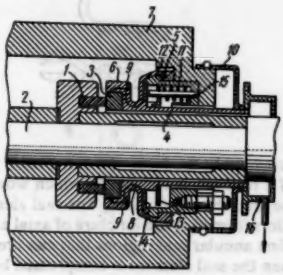


This is an improved straight leakoff seal. A differential pressure is maintained in the space between a first sealing member such as a collar on a rotatable shaft and an axially movable second seal member. An annular dam on the second seal member located adjacent the high-pressure end of the space between the two seal members is provided with a plurality of grooves equally spaced circumferentially. The new seal may be used for sealing gas or liquid.

3,751,046
FACE TYPE SEALING DEVICE

Alexei Ivanovich Golubev, Gorokhovsky pereulok, 4, kv. 32; Vitaly Viktorovich Gordeev, ulitsa Parshina, 21, korpus 2, kv. 10; Boris Sergeevich Goritsky, proezd Shokalskogo, 29, korpus 1, kv. 4, and Grigory Markovich Friedisman, ulitsa Dybenko, 22, korpus 1, kv. 24, all of Moscow, U.S.S.R.

Filed Apr. 28, 1972, Ser. No. 248,527
Claims priority, application U.S.S.R., July 30, 1971, 1680964
Int. Cl. F16j *15/36*
U.S. Cl. 277—88 1 Claim

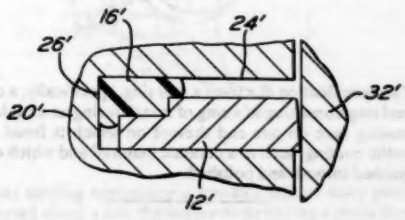


The face type sealing device includes sealing rings of which one is mounted about the shaft and the other one is stationary and is pressed to the first ring by a pressing member. The latter is sealed away from the fluid being sealed by the device with the help of a single-corrugation bellows and is mounted intermediate of the housing of the device and a sleeve. One end of the sleeve has cut therein a groove for receiving and supporting the corrugation of the bellows, whereas the opposite end of the sleeve has mounted thereon a resilient member, whereby positive fluid-tight sealing away of the pressing member is ensured.

3,751,047
PISTON RING ASSEMBLY

Richard P. McGee, Yeadon, Pa., assignor to Gould Inc., Mendota Heights, Minn.

Filed June 10, 1971, Ser. No. 151,750
Int. Cl. F16j *9/00*
U.S. Cl. 277—165 6 Claims



A piston ring assembly is comprised of a metal compression ring and an elastomeric polymeric expander ring engaging the inner diameter of the compression ring. The expander ring is made from a high temperature resistant elastomeric material which is deformed between the piston ring groove and the cast iron outer ring to form an oil seal and blow-by seal.

3,751,048
SEAL ELEMENT

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

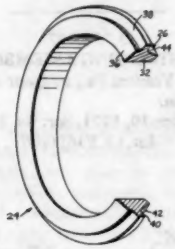
Filed June 2, 1972, Ser. No. 259,124
Int. Cl. F16j 15/08
U.S. Cl. 277—200 11 Claims

A seal element in the form of a convoluted tubular member formed of a resilient ductile metal which work hardens when stressed beyond the elastic limit. The seal element at the ends has shoulders formed at the juncture of axial and radial flanges which define annular seal regions that can create a high stress region when the seal element is compressed between opposed parts.

3,751,049
SEAL RING AND METHOD OF MAKING

Donald W. Busby, Durango, Colo., and Robert D. Goodfellow, Jr., Bedford, Pa., assignors to Subterranean Tools Inc., Beaumont, Tex.

Filed Feb. 25, 1971, Ser. No. 118,709
Int. Cl. B65d 53/00
U.S. Cl. 277—235 A 4 Claims



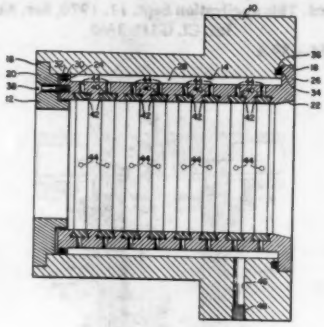
The specification discloses a seal ring, specifically, a dynamic seal ring consisting of a ring of metal having an annular radial sealing face on one end thereof on which is fused a non-metallic coating, such as a ceramic material and which coating is finished smooth and polished.

3,751,050
POT CHUCK

Ira Wade Hayes, Reinbeck, and Vernon John Barnes, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 8, 1972, Ser. No. 251,289
Int. Cl. B23b 31/10
U.S. Cl. 279—4 15 Claims

A pot chuck for internal machining of hollow, thin walled, cylindrical objects includes a body having a cylindrical bore with a plurality of annular grooves provided in the surface of the bore. An elastomeric material fills the grooves and is bonded to the sides of the grooves. Passages in the chuck body

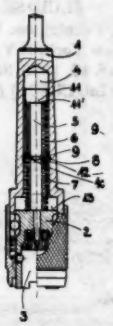


form a means for introducing a pressurized fluid to the bottom of the grooves so that the elastomeric material will bulge and grip the object to be machined.

3,751,051
QUICK-CHANGE CHUCK WITH LONGITUDINAL COMPENSATION FOR THREAD-CUTTING TOOLS

Wolfgang Schmidt, Lauf, Germany, assignor to Emuge-Werk Richard Glimpel Fabric, Fur Prazisions-Werkzeuge vorm Moschkau & Glimpel, Lauf, Germany

Filed Sept. 14, 1971, Ser. No. 180,390
Int. Cl. B23a 3/12
U.S. Cl. 279—16 5 Claims

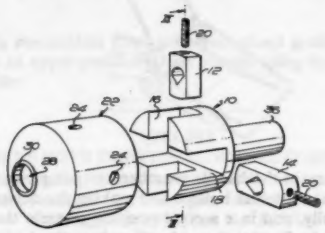


A quick-change chuck for thread-cutting tools or the like, having a shaft with an axial bore therein, and an axially movable tool-holding portion including a bolt extending into the axial bore of the shaft. A pair of axially aligned compression springs are disposed within the axial bore and engaging the interior of the shaft and the tool-holding portion. A pair of transverse washer-like stop members are provided, one secured to the interior of the bore and the other to the bolt, whereby one of the springs will be compressed under compression of the chuck and the other spring will be compressed under tension of the chuck, the non-affected spring in each case remaining unstressed.

3,751,052
DRILL CHUCK

George C. Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Company, Limited, Sheffield, England

Filed Nov. 22, 1971, Ser. No. 201,090
Claims priority, application United Kingdom, May 13, 1971, 14,870/71
Int. Cl. B23b 31/04
U.S. Cl. 279—18 10 Claims



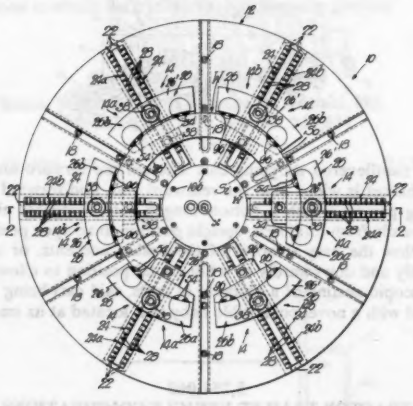
A drill chuck having a sleeve for reception of a drill shank through a central hole in its front end into a body part received into the sleeve, the body part having mutually slidable gripping members provided with apertures into which the shank is received and retained by means of adjustable screws in the slidable member. The sleeve protectively covers over the screws; and the body part is adapted for attachment to a driving spindle.

In a modified form the sleeve may be of plastics material, which the body may be of plastics, or rubber material.

3,751,053
CHUCK WITH CENTERING AND COMPENSATING JAWS

Linwood B. Swanson, Newington, Conn., assignor to Cushman Industries, Incorporated, Hartford, Conn.

Filed Apr. 24, 1972, Ser. No. 247,095
Int. Cl. B23b 31
U.S. Cl. 279—119 10 Claims

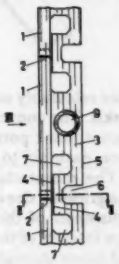


A chuck having a set of centering jaws and a set of compensating jaws, two axially movable plungers operatively connected with the jaws of the respective sets, with the plunger for the compensating jaws including a ball member with a universally movable socket member thereon for compensating action of the associated jaws, and fluid-operated mechanism operative to move the plungers for closure of the centering jaws on work before the compensating jaws close thereon, and for applying full work-gripping force to the jaws only when all jaws are in engagement with work. The compensating jaws are convertible into centering jaws by releasably locking the socket member to the ball member against movement from a neutral position in which the converted jaws are held centered on the chuck axis.

3,751,054
SKI EDGE

Friedrich Deutsch, Archenweg 40, A-6020 Innsbruck, Austria

Filed July 9, 1971, Ser. No. 161,073
Int. Cl. A63c 5/04
U.S. Cl. 280—11.13 E 1 Claim

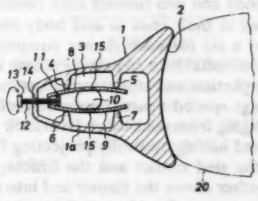


A ski edge having a vertical flange and a horizontal flange, said vertical flange being divided in successive sections by spaced slits running transversely to the longitudinal direction of the edge. Each slit of the vertical flange branches out into at least two branches running in opposite directions of the horizontal flange of the edge. The inner longitudinal border of the horizontal flange has an incision opposite each slit of the vertical flange.

3,751,055
SKI BINDING

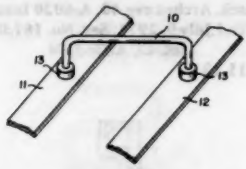
Yoshikatsu Ishida, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Sept. 3, 1971, Ser. No. 177,571
Claims priority, application Japan, Sept. 14, 1970, 45/80324
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 14 Claims



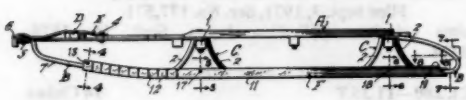
A ski binding comprising a box-like hollow body pivotally supported about a pin, the hollow body having a room therein. Two pairs of projections are disposed in the room substantially in symmetrical relation to each other with respect to the pin. A pair of elongated plate springs are inserted between the pin and projections, one of the springs being inserted between the pin and pair of projections, and the other between the pin and the other pair of projections. The springs are engaged with flat sections formed on both sides of the pin. The springs act to apply the urging forces to the pin and projections, so that the body is held in position. The body may be provided with another member adjusting the urging forces of the springs.

3,751,056
CONNECTOR FOR SKI TRAINING
Warren J. Wightman, 6 Crossover Rd., Fairport, N.Y.
Filed Oct. 1, 1971, Ser. No. 185,693
Int. Cl. A63c 11/00
U.S. Cl. 280—11.37 E 10 Claims



An improved connector releasably secures the ends of a ski training rod to a pair of skis. The connector includes heads on the ends of the rod adjacent shank portions of the rod and an elastomeric receptacle on each ski to receive the head and shank ends of the rod. The receptacle has a hollow interior and its upper region has a gripping sleeve with a through opening approximatley the diameter of the shank and extending downward into the hollow interior of the receptacle. The head of the rod can be forced down through the opening to interlock with the bottom of the sleeve and can be pulled straight up through the opening, but in use, the receptacle holds the shank securely and resists any force tending to alter the distance between the other end of the rod and the receptacle, even as the shank inclines relative to the receptacle.

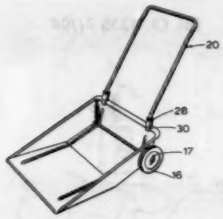
3,751,057
SLED SKI
Roy A. Matthiessen, 30 Sandy Hill Rd., Westfield, N.J.
Filed Sept. 8, 1971, Ser. No. 178,642
Int. Cl. B62b 13/12
U.S. Cl. 280—28 5 Claims



A sled has a body and two runners each connected thereto by braces secured at their ends to said body and the runner respectively, and a ski for each runner comprising an elongated strip of sheet metal bent to provide a base having a central longitudinal portion and downwardly extending longitudinal runner wings spaced apart transversely of said central portion and diverging from each other from their front ends to their rear ends and having upwardly projecting flanges at opposite sides of the sled runner and the braces, said flanges being drawn together above the runner and into snug engagement with the braces, and said central longitudinal portion and the downwardly extending diverging runner wings providing increased contact surface in snow.

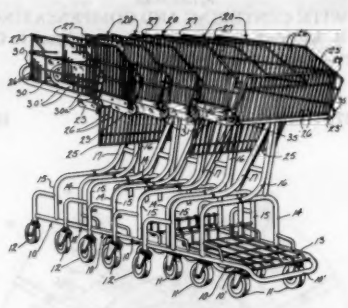
3,751,058
COMBINED SNOW SHOVEL, WHEEL BARROW AND DOLLY
Bjorn Arild Larsen, Oslo, Norway, assignor to Spigelverks Christinania, Oslo, Norway
Filed Oct. 1, 1971, Ser. No. 185,656
Int. Cl. B62b 3/02
U.S. Cl. 280—30 8 Claims

A multi purpose, manually operated carrying device, which can be utilized as a wheel barrow, a dolly or as a snow shovel. It comprises a substantially flat bottomed, trough-shaped container with two opposite side walls, and one transverse end wall, which container is adapted for a pair of wheels and provided with a pivotable handle member. The handle member and the container are mutually adapted to each other such that the handle member can be fixed to the container in a first



position wherein the handle member extends along the substantially flat container bottom and making the device operative as a dolly, and in a second position wherein the handle member can be fixed to the end wall making the device operative as a wheel barrow. A snow shovel is provided upon removal of the wheels.

3,751,059
CANTILEVER-TYPE, NESTABLE SHOPPING CARTS
David N. Dunder, Glendora, and Howard Lee James, Sylmar, both of Calif., assignors to Technibitt Corporation, Burbank, Calif.
Filed Sept. 21, 1971, Ser. No. 182,390
Int. Cl. B62b 3/04
U.S. Cl. 280—33.99 F 9 Claims

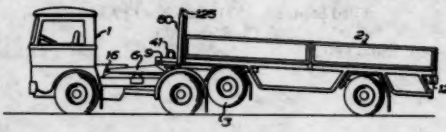


A cantilevered shopping cart wherein the forward end of the basket is wider than the rearward end, said forward end being provided with a bottom-hinged gate swingable either forwardly from its closed, upright position to an open position to allow the easy removal of the basket contents, or rearwardly and downwardly to a horizontal position to allow the telescopic nesting of a plurality of carts, said cart being provided with a novel collapsible baby seat located at its smaller end.

3,751,060
TRACTOR TRAILER VEHICLE COMBINATIONS
Bengt Roland Holmberg, Kalmar, and Ralf Krister Ebbe Petersson, Alsterbro, both of Sweden, assignors to Kalmar Verkstadsaktiebolag, Kalmar, Sweden
Filed Aug. 12, 1970, Ser. No. 63,228
Claims priority, application Sweden, Aug. 13, 1969, 11243/69
Int. Cl. B62d 53/00
U.S. Cl. 280—402 8 Claims

A vehicle combination comprising a tractor and a trailer, in which combination the tractor in addition to a trailer coupling

has a semi-trailer coupling (fifth wheel), and the trailer in addition to a trailer coupling has a semi-trailer coupling (king pin) and front wheels which can be raised by means of an



operating mechanism from a normal wheel position for the trailer to an upper position which permits using the trailer as a semi-trailer.

3,751,061

VEHICLE WITH INDIVIDUAL WHEEL SUSPENSION

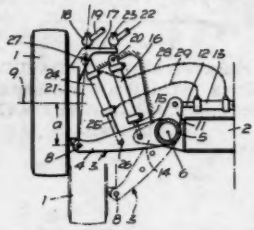
Hans Scheuerpflug, Bad Mingolsheim, Germany, assignor to Johannes Fuchs, K. G., Ditzingen, Germany

Filed Jan. 12, 1972, Ser. No. 217,138

Claims priority, application Germany, Jan. 14, 1971, P 21 01 513.4

Int. Cl. B60p *1/00*

U.S. Cl. 280—96.2 R **6 Claims**



An individual wheel suspension for a vehicle comprising a single transverse lever for pivotably connecting a wheel to the vehicle chassis, and hydraulic means for adjusting the camber of the wheel within wide limits independently of any angular position to which the transverse lever might be pivoted.

3,751,062

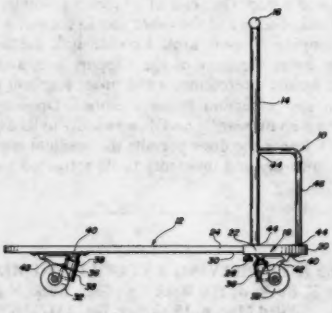
SCOOTER SKATEBOARD

H. Thomas White, Sr., 2103 Saranac St., Adelphi, Md.

Filed Feb. 24, 1972, Ser. No. 228,811

Int. Cl. B62k *9/00*

U.S. Cl. 280—87.04 A **2 Claims**



The scooter skateboard has a platform with any well-known tracking wheel trucks suspended for automatic balancing and steering by tilting the rider's body and the skateboard platform in the steering direction, and a removable handle mounted firmly on one end of the platform for assisting novice riders in gaining practice in balanced riding and steering maneuvers until they can perform without relying on the assistance of the handle to ride the skateboard unobstructively and with more dexterity in either direction.

3,751,063

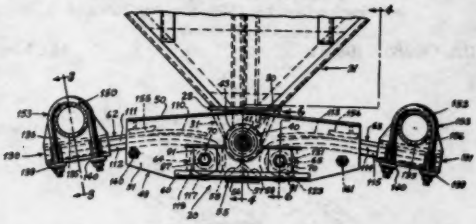
MULTIPLE JOINT TANDEM SUSPENSION WITH TORQUE SPRINGS

John E. Raidel, Springfield, Mo., assignor to Ridewell Corporation, Springfield, Mo.

Filed Nov. 16, 1971, Ser. No. 199,150

Int. Cl. B60g *5/04*

U.S. Cl. 280—104.5 A **9 Claims**



A tandem vehicle suspension having a compensator member pivotally supported on a transverse trunnion depending from a vehicle chassis, independent forwardly and rearwardly extending torque springs pivotally connected to the compensator at one end and to the forward and rearward axles, respectively, at their other ends, and bearing means between the compensator and torque springs, the respective pivotal connections and bearing means creating greater reactive forces and better load distribution between the two axles.

3,751,064

MOBILE HOME UNDERFRAME

Albert A. Goodson, Jr., Houston, Tex., assignor to Southwestern Pipe, Inc., Houston, Tex.

Filed Dec. 8, 1971, Ser. No. 205,892

Int. Cl. B60p *3/00*

U.S. Cl. 280—106 T **7 Claims**

An underframe structure, system and method for use with mobile homes and other transportable buildings including a pair of longitudinal beams made of C-sections, an interlocking C-section used at the area of greatest bending moment, a reinforcing hat-section member rigidly affixed to each beam but removable therefrom to increase stiffness in the area of greatest bending moment, a wheel support structure depend-

ing from the hat-section member, and a removable hitch on the underframe which can be attached to the wheel support structure and hat-section members to move them independently of the underframe. The disclosure also includes a method of assembly of such an underframe structure, using a minimum of simple jigs. There is also disclosed a method for moving a mobile building from a first location to another location wherein a wheel support structure which includes elongate stiffening members is mounted beneath the building in such a way as to improve the stiffness of the building underframe during transporting, a removable hitch member is attached to the frame of the building, the building is moved to the other location, and the support structure and hitch are then removed from the mobile building and attached to each other for transportation independently of the building, while the building is lowered to a suitable foundation.

3,751,065

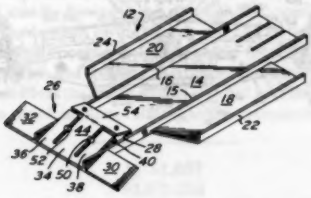
RACING CAR AND CHASSIS THEREFOR

Matthew A. Sullivan, Willow Grove, Pa., assignor to Sullivan Products, Inc., Willow Grove, Pa.

Continuation-in-part of Ser. No. 157,561, June 28, 1971. This application Dec. 16, 1971, Ser. No. 208,848

Int. Cl. A63h *17/26*

U.S. Cl. 280—106.5 R 10 Claims



A radio control racing car having a resilient suspension system which is adjustable is provided. The wheels of the car are permitted to flex substantially independently of each other with a positive control provided for the amount of flexibility of each wheel.

3,751,066

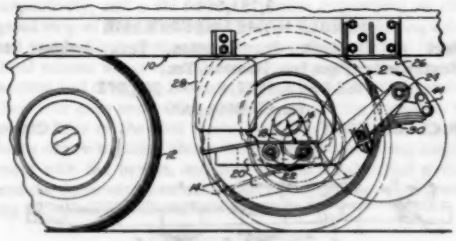
WHEEL SUSPENSION SYSTEM

Gattu Narahari, Marion, Ohio, assignor to Sycon Corporation, Marion, Ohio

Filed Sept. 1, 1971, Ser. No. 176,911

Int. Cl. B60g *11/46*

U.S. Cl. 280—124 F 6 Claims



An air suspension system for a wheeled vehicle and particularly for the auxiliary lift axle of a vehicle wherein a trailing arm supporting the axle is pivotably supported at one end to the frame with an air spring operatively connected to the other end of the arm and a cantilever leaf spring rigidly connected at one end to the arm and cooperating with a frame-supported link at its other end to form a mechanism which normally biases the axle to an elevated position and which, in the lowered position of the axle, serves both as an energy store for lifting the axle and as a means of shock absorption.

3,751,067

TRAILER LANDING GEAR FOOT

Hyle K. Claflin, North Muskegon, and Jack T. Belke, Grand Rapids, both of Mich., assignors to Westran Corporation Muskegon, Mich.

Filed Sept. 13, 1971, Ser. No. 179,850

Int. Cl. B60s *9/00*

U.S. Cl. 280—150.5 9 Claims

A readily detachable foot construction which includes a base plate and a pair of upstanding side plates fixed to the base plate for retaining the lower end of a landing gear leg therebetween. In one embodiment of the invention the two side plates include aligned apertures with one of the side plates laterally bendable prior to assembly to permit ready insertion of the leg into the foot. In another embodiment the bendable side plate is replaced by a hub plate which can be attached to the side plate by bolts or the like to mount the leg to the foot. Also included in each embodiment is a cross plate having at its upper edge a cut-out portion engageable with a mating extension at the lower leg end to take the side loads which would normally be imposed upon the side plates.

3,751,068

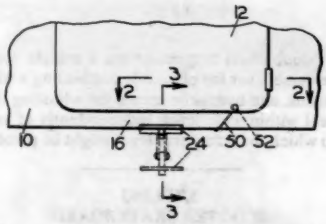
DOOR-OPERATED VEHICLE BOARDING STEP

Howard C. R. Green, 1942 11th Ave. W., Eugene, Oreg.

Filed Sept. 9, 1971, Ser. No. 179,029

Int. Cl. B60r *3/02*

U.S. Cl. 280—166 3 Claims



A boarding step for trucks, construction equipment and other vehicles having hinged entrance doors comprises a telescoping support arm having on its inner end means for attachment to a first frame member beneath the vehicle and on its outer end a step. One end of a lever is pivotally connected to the vehicle frame and the other end to the outer segment of the telescoping support arm. Flexible link means interconnects the outer segment of the support arm and the door. Resilient means interconnects the outer segment of the support arm and a second frame member. Opening the door swings the step outwardly and downwardly to its extended use position. Closing the door permits the resilient means to shift the step inwardly and upwardly to its retracted storage position.

3,751,069

TRAILER HITCH HAVING A STABILIZING MECHANISM

Theodore K. Suckow, 160 Rock Rd., Glen Rock, N.J.

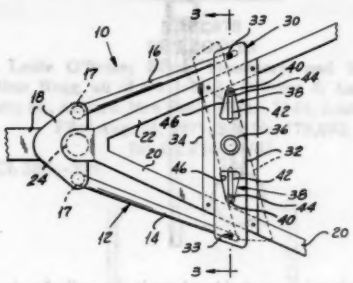
Filed Mar. 6, 1972, Ser. No. 231,938

Int. Cl. B62d *53/00, 1/06*

U.S. Cl. 280—406 A 18 Claims

The trailer hitch stabilizing mechanism has an elongated bar assembly wherein each bar is pivotally secured at one end to the tractive vehicle and, at its opposite distal end portion, con-

nected to the frame of the trailer so that, upon endwise axial movement of the bar relative to the trailer frame, the bar causes a horizontal, stabilizing force to be exerted on the trailer frame. The mechanism includes, in combination with the elongated bar assembly, locking means coacting with each



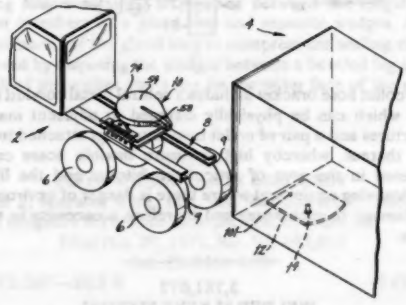
elongated bar assembly to render the bar, as desired, operative or inoperative with respect to exerting a horizontal stabilizing force. A control means for selectively actuating the locking means to effect operativeness and inoperativeness of the elongated bar assemblies is provided at a location remote from the locking means.

3,751,070

FIFTH WHEEL UNIT

Raymond H. Schaffart, Rt. 5, Box 71, and Charles V. Otis, Rt. 5, Box 76, both of Rolla, Mo.

Filed Oct. 29, 1971, Ser. No. 193,684
Int. Cl. B62d *53/08*
U.S. Cl. 280—432 **10 Claims**



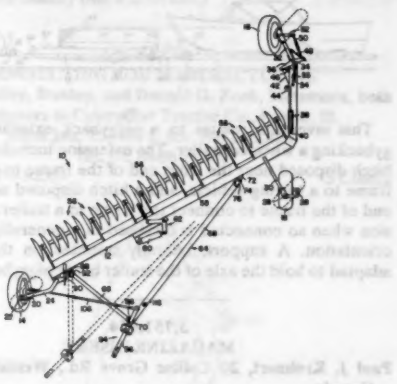
A fifth wheel assembly for coupling an over-the-road tractor to a trailer has a skid plate which is carried by a turntable bearing on the tractor so that the skid plate is normally free to rotate relative to the tractor. The skid plate is provided with a retractable locking pin which normally projects into the trailer and prevents the tractor from rotating relative to the skid plate. It is further provided with the usual latch for engaging and retaining the trailer king pin and a release lever for operating that latch. The locking pin is coupled to the release lever and operated thereby so that when the latch is opened, the locking pin is retracted to permit complete disengagement of the tractor from the trailer. A brake mechanism is incorporated into the fifth wheel assembly and includes brake cylinders disposed within the bearing. When expanded, these cylinders bear against the mount for the skid plate and prevent the skid plate from rotating relative to the tractor. The brake cylinders are operated through a valve which opens on manual command to facilitate coupling and also opens when the tractor-trailer combination is involved in a panic stop to prevent jackknifing during the stop.

3,751,071

HITCH STRUCTURE FOR AGRICULTURAL IMPLEMENTS

Roger Lee Patterson, Fonthill, and Henning Isachsen, Merritton, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Oct. 30, 1970, Ser. No. 85,377
Int. Cl. B60d *1/14*
U.S. Cl. 280—478 A **8 Claims**



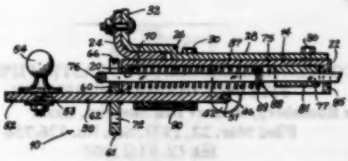
A foldable hitch structure for use on an elongated agricultural implement convertible between a wide, generally crosswise operating position and a narrow, generally longitudinal transport position, the hitch comprising a pair of arms pivotally connected to spaced points on the implement frame at their rearward ends and pivotally interconnected at their forward ends. The hitch is adapted for connection to the drawbar of a tractor at a point near the interconnection of the two arms, and one of the arms is telescopic to permit the structure to fold from an operating position, wherein the connection point is located forwardly of the implement, to a transport position, wherein the connection point is located toward one end thereof. A spring biased latch pin is actuated by movement of the telescopic arm to secure the hitch in either position.

3,751,072

SWINGING TYPE TRAILER HITCH

Galen Williams, 2508 Random Acres Ct., Pittsburg, Kans.

Filed Aug. 25, 1971, Ser. No. 174,817
Int. Cl. B60d *1/06*
U.S. Cl. 280—491 B **17 Claims**



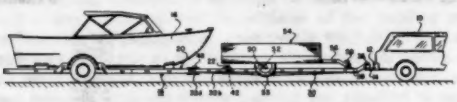
This invention relates to a retractable trailer hitch and more particularly to one having quick release and locking means for placing the hitch in either its tow or store position and includes a housing, a retractable T-bar mounted within the housing, and a pivotal tow plate pivotally mounted near the center of the housing for swinging movement between a tow position and a stored position. The T-handle is spring biased to releasably lock the tow plate in either of its two positions.

3,751,073

METHOD AND APPARATUS FOR TOWING TRAILERS

William M. Alexander, 8554 Sonneville Dr., and Lawrence J. Stancik, 8562 Sonneville Dr., both of Houston, Tex.

Filed Sept. 27, 1971, Ser. No. 183,901
Int. Cl. B62d 53/00
U.S. Cl. 280—482 2 Claims



This invention relates to a piggyback extension for piggybacking a wheeled trailer. The extension includes a frame, a hitch disposed near the front end of the frame to connect the frame to a towing vehicle, and a hitch disposed near the rear end of the frame to connect the frame to a trailer. The extension when so connected is disposed in a generally-horizontal orientation. A support, laterally-mounted on the frame, is adapted to hold the axle of the trailer being piggybacked.

3,751,074

MAGAZINE INSERT

Paul J. Krohnert, 20 Collins Grove Rd., Westhill, Ontario, Canada

Filed Mar. 10, 1972, Ser. No. 233,698
Claims priority, application Canada, Mar. 18, 1971, 108109
Int. Cl. G09b 17/02; B42d 1/00
U.S. Cl. 283—46 4 Claims

The invention comprises a magazine insert consisting of a plurality of pages each corresponding in printed word content with a page of a magazine but in a language different from that of the magazine page. The insert pages, fixed together in numerical order, will be circulated with the magazine in the country of the language of the insert pages. The magazine may therefore be produced in a single basic language edition but when combined with an appropriate translation insert of the printed articles therein will provide a format and display items in identifiable relation to the translated passages in the insert pages.

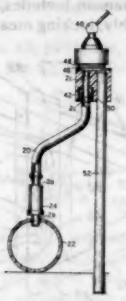
3,751,075

COUPLING MEMBERS FOR PLASTIC PIPES AND FITTINGS USEFUL THEREWITH

Peretz Rosenberg, Moshav Beit Shearim, Israel

Filed Mar. 22, 1971, Ser. No. 126,756
Int. Cl. F16l 3/00
U.S. Cl. 285—61 6 Claims

A coupling member particularly for plastic pipes is formed with a through-going bore and with an annular shoulder dividing the member into a short part and a long part separated by the shoulder, the shoulder being defined by a pair of intersecting annular walls forming a sharp peripheral edge at their juncture. The annular wall at the long part side of the shoulder is substantially at right angles to the longitudinal axis of the member, and the annular wall at the short side of the shoulder is formed with a concave taper. Various applications of such coupling member are described, including an arrangement wherein it is attached to the end of a flexible tube, an arrangement wherein it is mounted in a bore in the wall of a pipe, and a further arrangement wherein it is received in a bore of a fitting for coupling to a water sprinkler.

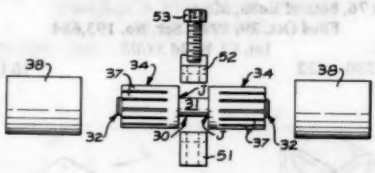


3,751,076

COLLET HOSE BRACKET

James W. Thais, Decatur, and Donald E. Daykin, Taylorville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 10, 1971, Ser. No. 206,780
Int. Cl. F16l 3/00
U.S. Cl. 285—62 1 Claim



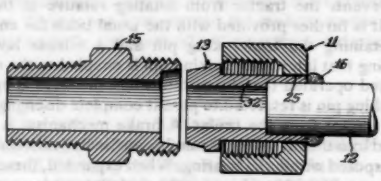
A collet hose bracket includes a central metal conduit structure which can be physically clamped to adjacent machine structures and a pair of collet hose couplings attached to each end thereof, whereby high pressure flexible hoses can be tethered in the area of articulated hitches and the like of earthmoving equipment where there is danger of environmental damage to such hoses and therefore a necessity to tether them.

3,751,077

WELDED SLEEVE FITTING

Jan A. Hiszpanski, Chicago, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,707
Int. Cl. F16l 55/00
U.S. Cl. 285—169 10 Claims



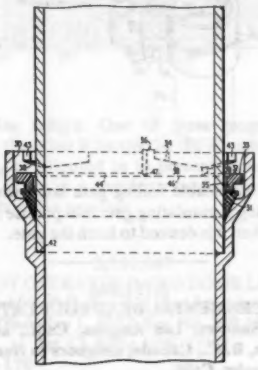
A fitting for use with metal tubes adapted for critical applications such as involving high pressure and/or elevated temperatures for heavy external loads. The fitting includes a sleeve which is sealingly welded to the tube end and defines an

improved cooperative nut and sleeve structure whereby the nut may be threadedly withdrawn from the body notwithstanding the projection of the sealing weld sufficiently from the tube to prevent complete withdrawal of the nut from the sleeve.

3,751,078
PIPE JOINTS

John Leslie O'Brian; Bryan Finnimore, and Dallas John Arthur Hogg, all of c/o John L. O'Brian & Associates, 70 Derby St., Auburn, New South Wales, 2144, Australia

Filed Aug. 26, 1971, Ser. No. 175,092
Int. Cl. F16l 21/02
U.S. Cl. 285—339 **2 Claims**

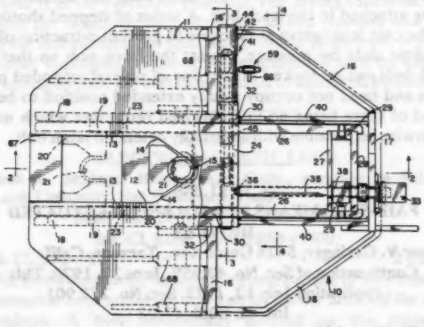


The invention provides a spigot and joint where an internal sealing ring between the spigot and joint is retained in position by an insertable latched ring. In another modification the sealing ring is retained in position between the spigot and socket members by a gland ring and separate wedges. Axial displacement of the gland ring to compress the sealing ring is achieved by disposing the wedges between a beveled lug at the mouth of the socket and a lug on the outer face of the gland ring.

3,751,079
FIFTH WHEEL PLATE ASSEMBLY

Walter J. Marulic, Gary, Ind., and Ray L. Ferris, Thornton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 27, 1971, Ser. No. 193,011
Int. Cl. F16d 9/00
U.S. Cl. 287—20.5 R **5 Claims**

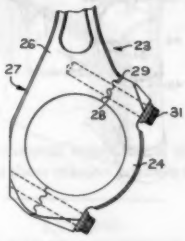


A fifth wheel plate assembly for trailer hitches securing trailers to railway flat cars includes a top plate having an opening in which a movable lock jaw is supported for grasping and locking the kingpin of a trailer to the fifth wheel. The lock jaw is provided with extensions which are connected to a suitable screw type actuating assembly for moving the jaw to its closed position. In the closed position the jaws are locked by means of a lock bolt assembly which is moved into engaging position with the extensions to lock the jaw against movement. A lock bolt assembly also includes an indicating and latch assembly which in turn locks the locking bolt in the engaging position and indicates visually that it is locked.

3,751,080
CONNECTING ROD MANUFACTURING

John M. Bailey, Dunlap, and Donald G. Zook, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 15, 1971, Ser. No. 106,804
Int. Cl. B60b 27/06
U.S. Cl. 287—52.03 **3 Claims**

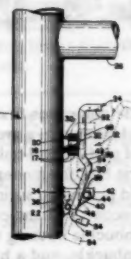


High quality connecting rods and similar machine components comprised of an assembly of two clamped together parts are manufactured from tough heat treated high carbon steel, or the like, according to a manufacturing method of reduced cost. Essentially all machining of the component is conducted on an integral piece prior to its being divided into the two separate parts by fracturing along a frangible zone effected by electron beam bombardment. The resulting irregular mating surfaces of the respective parts have substantial resistance to relative sliding upon clamping of the parts together.

3,751,081
THREE-PIECE CLAMP ASSEMBLY FOR THE BRACES OF SCAFFOLDING

Vernon R. Schimmel, Arlington Heights, and James C. Shoemaker, Hampshire, both of Ill., assignors to Symons Corporation, Des Plaines, Ill.

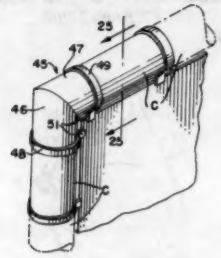
Filed June 23, 1972, Ser. No. 265,542
Int. Cl. E04c 1/00
U.S. Cl. 287—53.5 **7 Claims**



A three-piece, inseparable, post-attached clamp assembly including a wedge piece by means of which the contiguous

ends of the diagonal and/or horizontal braces of conventional scaffolding may be clamped firmly but releasably against the post to which the assembly is applied.

3,751,082
CONNECTOR AND MODULES FOR STRUCTURAL ASSEMBLIES
Kenneth E. Somerville, 47091 Dequinder, Rochester, Mich.
Filed Feb. 8, 1972, Ser. No. 224,519
Int. Cl. F16b 7/04, 2/20
U.S. Cl. 287—54 A **17 Claims**

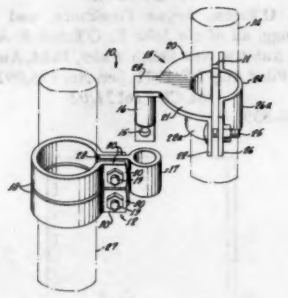


Modular structure and method for constructing furniture and the like, wherein inexpensive, resilient connecting means is used to join together a plurality of normally discarded cans, such as soft drink and beer cans and the like, to construct useful items such as household furniture and decorations and the like with the discarded cans.

3,751,083
TENSION TURNBUCKLE
Sol H. Jacobson, Bedford, and Donald R. Gorsuch, Northborough, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Feb. 25, 1972, Ser. No. 229,450
Int. Cl. F16b 7/06
U.S. Cl. 287—60 **9 Claims**

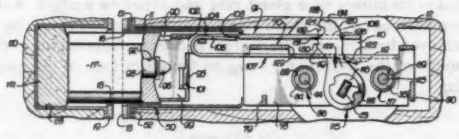
A tension turnbuckle comprises first and second bolts having connectors integral therewith, a preloaded spring arranged about the inner end of said second bolt, a turnbuckle housing threaded onto said first bolt for movement thereon and fixed to the outer end of said preloaded spring, an indicator fixed to the inner end of said second bolt and cooperating with a viewing slot within the turnbuckle housing to permit ascertation of the tension of the turnbuckle, and a housing cap arranged to be screwed onto the turnbuckle housing after the proper tension is achieved to lock out the spring and provide a solid metal load path through the turnbuckle from the first bolt to the second bolt.

3,751,084
TRANSLATING GATE LATCH
George O. Lening, Rowland Heights, Calif., assignor to Master Fence Fittings, Inc., La Habra, Calif.
Filed June 24, 1971, Ser. No. 156,320
Int. Cl. E05c 5/00
U.S. Cl. 292—114 **3 Claims**



A rotatably adjustable rolling gate latch which eliminates the need to bring a translating gate into precise alignment with a fence post when it is desired to latch the gate.

3,751,085
INCREMENTAL DEAD BOLT LATCH
Vernard W. Sanders, Los Angeles, Calif., and Dennis G. Potter, Delta, B. C., Canada, assignors to Norris Industries, Inc., Los Angeles, Calif.
Filed Feb. 7, 1972, Ser. No. 224,151
Int. Cl. E05c 1/06
U.S. Cl. 292—140 **3 Claims**

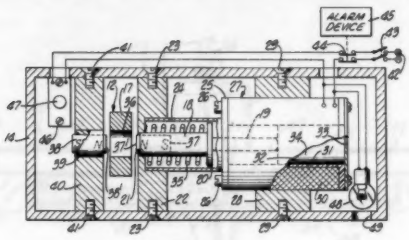


A dead bolt latch for a door has a rotating cam lever action for extending the bolt into a strike plate recess in the door frame. The cam has the form of a pivoted arm and is rotated by the tail piece of a lock device. The pivot axis is near one edge of a lock case and engages a cam opening in an actuator slide at the opposite side of the latch case, the actuator slide being attached to the latch bolt. A series of stepped shoulders on the cam lever serve as blockers to prevent retraction of the actuator slide by pressure against the latch bolt so that the latch bolt can be locked in any one of several extended positions and need not occupy a fully extended position to be assured of there being no unauthorized retraction which might otherwise be possible with a partially extended latch bolt.

3,751,086
FAIL-SAFE MEANS FOR SOLENOID ACTUATED DEVICES
Arthur V. Geringer, 5424 Geyer Ave., Tarzana, Calif.
Continuation of Ser. No. 47,959, June 22, 1970. This application July 12, 1972, Ser. No. 272,901
Int. Cl. E05b 47/02
U.S. Cl. 292—144 **3 Claims**

Fail-safe means for solenoid actuated devices, such as door locks, valves and the like, wherein the actuated element is operable to an active position upon energization of the sole-

noid, and upon deenergization of the solenoid is activated by a compression spring to an inactive position. A pair of permanent magnets provide the fail-safe feature, whereby the actuated element will be moved to its inactive position, in the



event of spring failure. One of these magnets is fixedly mounted, and the other is carried by the actuated element, the magnets being so oriented as to present closely confronting like magnetic poles in a repulsion mode when the actuated element is in its active position.

3,751,087

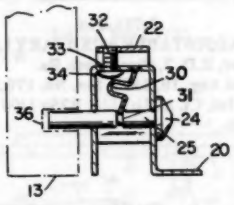
FOOT OPERATED PATIO DOOR LOCK

Donald B. Hawkins, P.O. Box 221, San Leandro, Calif.

Filed May 1, 1972, Ser. No. 249,675

Int. Cl. E05c *1/00, 13/02*

U.S. Cl. 292—170 **9 Claims**



A device for locking sliding patio doors and the like employing an over-center spring-induced toggle action imparted to a lock bolt to selectively urge the lock bolt into locked position or hold it in an unlocked position. The spring functions as a keeper for retaining the bolt in the locked position and as a stop for determining the unlocked position of the bolt. A pedal member impinging on the spring releases the lock by forcing the spring to shift the bolt from locked to unlocked position.

3,751,088

ELECTROMAGNETIC LOCK

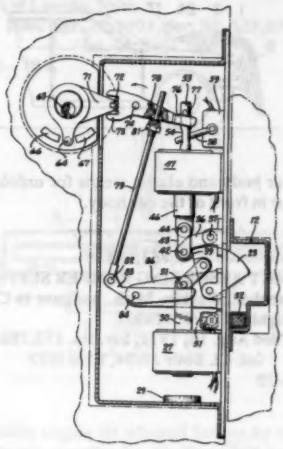
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed May 24, 1971, Ser. No. 146,115

Int. Cl. E05c *3/06*; E05b *47/00*;

U.S. Cl. 292—201 **2 Claims**

An electromagnetic lock has a frame on one of two relatively movable door members and a strike on the other of the door members. A bolt horizontally pivoted on the frame is withdrawn by gravity and impelled under manual control into projected, strike-engaging position by a first electromagnet-effective only when a magnetically responsive switch on one door member and a magnet on the other door member are in proximity. The bolt is held in projected position by a detent withdrawable against gravity by a second electromagnet under



manual control. Mechanical operation is also provided, and indicators and alarms show relative position of the lock parts.

3,751,089

FRANGIBLE SHOCK ABSORBING BUMPER

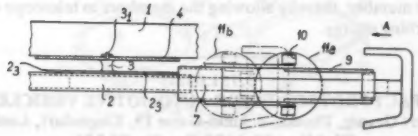
Andre Lefeuvre, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, both of France

Filed Sept. 3, 1971, Ser. No. 177,591

Claims priority, application France, Sept. 17, 1970, 7033727; Jan. 11, 1971, 7100645

Int. Cl. B60r *19/04*; B61f *19/04*; F16d *63/00*

U.S. Cl. 293—1 **8 Claims**



A frangible shock absorbing bumper device for automotive vehicles, characterized in that it comprises an auxiliary chassis disposed at the end of the main chassis of the vehicle or of the structure corresponding thereto, the auxiliary chassis being connected to said main chassis by at least one element so arranged as to undergo a permanent deformation by shearing according to a predetermined law, the resistance to deformation of the element being lower than the resistance to deformation of the main chassis.

3,751,090

VEHICLE FENDER

Manzo Wakabayashi, 7-13, 2-chome, Nishirokugo; Toshio Kato, 353, 3-chome, Kashiwagi, both of Tokyo; Michio Kawabe, 2341 Isurumi-cho, Yokohama; Nobumi Kawai, 2-13, 2-chome, Ebis, Tokyo, and Minoru Ishida, 66-Shirahata, Urawa, all of Japan

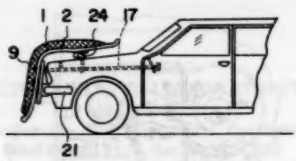
Continuation of Ser. No. 146,031, May 24, 1971, abandoned. This application July 27, 1972, Ser. No. 275,892

Int. Cl. B60r *19/06, 21/14*; B61f *19/06*

U.S. Cl. 293—38 **3 Claims**

This invention relates to a rescue device adapted to be at-

tached to a car body, and comprising a net stretched over a frame which is foldably and vertically slidably attached to the



front of the car body and elastic means for unfolding said net to spread it out in front of the car body.

3,751,091

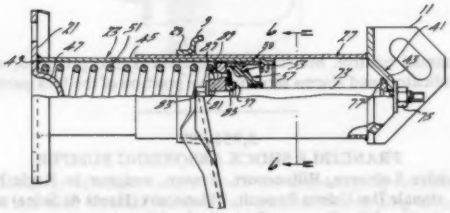
ENERGY ABSORBING BUMPER SUPPORT

Dennis N. Renneker, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 18, 1971, Ser. No. 172,788

Int. Cl. B60r *19/04*; F16f *9/22*

U.S. Cl. 293—70 **20 Claims**



Energy absorbing bumper system for an automotive vehicle using two telescoping tubular members with a piston connected by a rod to one member and slideable in the other member. Fluid is sealed in the other tubular member and is forced through valve means in the piston when the pressure of the fluid is increased above a predetermined value due to the application of a force of a predetermined magnitude on the other member, thereby allowing the members to telescope and absorbing energy.

3,751,092

IMPACT PROTECTOR FOR AUTOMOTIVE VEHICLES

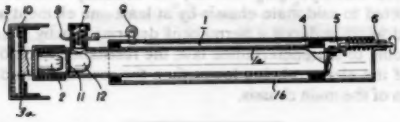
Hubert Granig, Thomas-Schmid-Gasse 19, Klagenfurt, Austria

Filed Nov. 12, 1970, Ser. No. 88,956

Claims priority, application Austria, Nov. 14, 1970, 8A 10 697/69, 63c3

Int. Cl. B60r *19/06*

U.S. Cl. 293—73 **10 Claims**



An impact protector for automotive vehicles, which comprises a bumper bar, and means for varying the distance of the bumper bar from the chassis of the vehicle. The distance varying means include means providing a pressurized gas. At least one hydraulic, telescopic piston-cylinder unit having a first chamber which receives a pressure liquid and includes a working chamber in an operative condition, and the pressure liquid is adapted to be pressed into the working chamber by the pressurized gas and operates by expanding the piston-cylinder unit. The protector remains then in an inoperative collapsed position during normal vehicle operation.

3,751,093

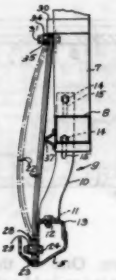
ENERGY STORING RECOVERABLE BUMPER SYSTEM

Victor F. Hebert, San Jose, Calif., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,375

Int. Cl. B60r *19/06*

U.S. Cl. 293—89 **15 Claims**



A horizontal bumper is supported in relation to a support such as a vehicle frame by jacking and roll-preventing bracket structure which is adapted to transmit to the frame impacts against the bumper transversely relative to the vehicle but permits the bumper to displace relatively toward the frame in response to inboard pressures or impacts against the bumper, with the impact energy stored in resilient buckling column bars thrustably interposed endwise between the bumper and the frame. To accommodate conditions where resilient flexing of the buckling column bars in a horizontal direction is not feasible, the arrangement enables the buckling columns to flex in a generally vertical direction.

3,751,094

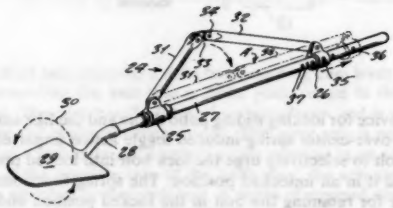
SLIDEABLY ADJUSTABLE AUXILIARY LIFT HANDLE

Gerard M. Bohler, R.D. 2, Pine Grove, Pa.

Filed Aug. 10, 1971, Ser. No. 170,519

Int. Cl. A01b *1/22*; B25g *1/04*

U.S. Cl. 294—58 **3 Claims**



An auxilliary handle which is readily securable to a regular handle of an implement such as a shovel, rake or hoe, the device consisting of an angularly shaped member that is secured at its opposite ends to the regular handle, and the center angular portion of the auxilliary handle extending upwardly so that it may be grasped by a person's one hand while the other hand grasps the regular handle.

3,751,095

UNIVERSAL SUCTION HEAD CONVEYOR

Charles E. Myles, St. Louis County, Mo., assignor to Alvey, Inc., St. Louis, Mo.

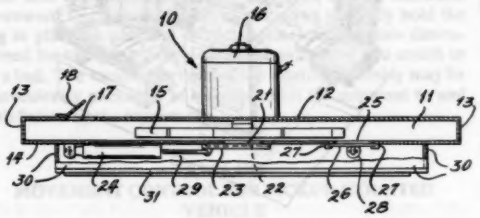
Filed Sept. 30, 1971, Ser. No. 185,078

Int. Cl. B66c *1/02*

U.S. Cl. 294—64 R **8 Claims**

A conveyor suction head assembly operating on the principle of establishing a grip on a load which may be a group or a

layer of articles by a differential pressure across the load wherein a plenum chamber is created with a plurality of individually valve controlled pockets capable of establishing surface contact with the load to be transported and, thereby establishing an operating condition where the plenum chamber when reduced to a negative atmospheric condition will establish the pressure differential across the load or layer



of articles which are normally at ambient pressure conditions. In the assembly the respective pockets are equipped with gravity responsive control valves for controlling the effectiveness of the pressure drop across the load, and it is unique that the control valves and the orifices controlled thereby may be easily removed for replacement if different orifice size and different weight of valve elements may be required.

3,751,096

TWISTLOCK DEVICE FOR LOAD HANDLING APPARATUS

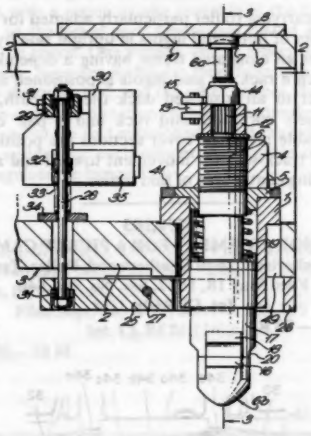
Andrew Stewart Wyon, Bath, England, assignor to Stothert & Pitt Limited, Bath, Somerset, England

Filed Feb. 7, 1972, Ser. No. 223,906

Claims priority, application Great Britain, Feb. 11, 1971, 4,452/71

Int. Cl. B66c 1/22

U.S. Cl. 294—67 R **19 Claims**



A twistlock device for use in handling load handling containers of the type used in I.S.O. and "Sealand" systems, comprising first engagement means suitable for I.S.O. castings, and second engagement means suitable for "Sealand" castings, wherein said first and second engagement means are in coaxial relationship with one another, and are releasably engageable with one another, so that they can be angularly turned in unison, or one relative to the other.

3,751,097

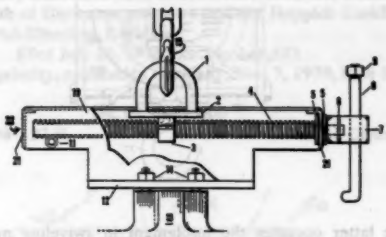
ADJUSTABLE ENGINE LIFT

Robert L. Jones, 715 N. 55th, and Harold H. Jones, 2611 N. 36th, both of Lincoln, Nebr.

Filed Apr. 12, 1971, Ser. No. 133,071

Int. Cl. B66c 1/66

U.S. Cl. 294—78 A **7 Claims**



An adjustable engine lift adapted for use by mechanics and the like, wherein a means for removing and installing an automobile engine is simplified by being able to adjust engine angle while the engine weight is suspended.

3,751,098

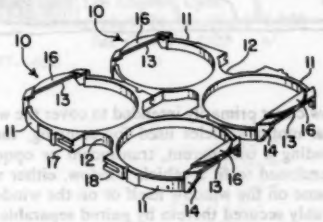
CONTAINER CARRIER

Ronald C. Owen, Harwood Heights, Ill., assignor to Illinois Tool Work Inc., Chicago, Ill.

Filed Nov. 17, 1971, Ser. No. 199,606

Int. Cl. B65d 21/02

U.S. Cl. 294—87.2 **3 Claims**



A molded plastic carrier for a pair of containers such as cans in which the sides of the carrier include male and female snap means so that two or more carriers may be joined together to provide a unitary package of a selected number of carriers for storing and transporting a selected number of pairs of containers and further may be conveniently manually separated or rejoined.

3,751,099

HYDRAULIC ACTUATORS FOR ORIENTING IMPLEMENTS ON CRANES

Roy O. Billings, 6221 W. Wisconsin Ave., Milwaukee, Wis.

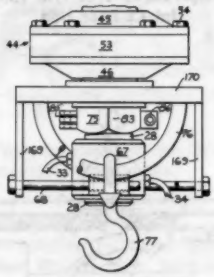
Division of Ser. No. 879,686, Nov. 25, 1969, Pat. No. 3,633,607. This application Oct. 7, 1971, Ser. No. 187,460

Int. Cl. B66c 1/22

U.S. Cl. 294—88 **8 Claims**

A pressure plate which is adjustably supported on the end of the dipper stick has a depending non-rotatable shaft around which a circular hydraulic actuator is rotatably mounted, there being provision for removably supporting an implement

for rotation around the shaft, together with means for detachably connecting the implement to the actuator so that



the latter operates the implement in swiveling movement, hydraulic conduits for the actuator and implement being disposed within the non-rotatable shaft.

3,751,100

REMOVABLE VEHICLE WINDOW COVER

Robert A. Keyes, Box 90873, Inglewood, Calif.

Filed Dec. 10, 1971, Ser. No. 206,655

Int. Cl. B60j *1/20*

U.S. Cl. 296—95 C **6 Claims**

A window cover primarily intended to cover the windows of recreational motor vehicles used for camping, the window cover including a transparent, translucent or opqque cover sheet dimensioned to fit a vehicle window, either within the window frame on the window itself or on the window frame, and removably secured thereto by paired separable fastening elements secured respectively to the window or the frame and to the cover sheet. The window cover also includes a removable curtain unti having marginal portions fitting over the margins of the cover sheet.

3,751,101

VEHICLE SERVICING CART

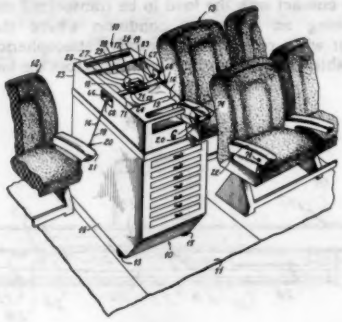
Matthew N. Miller, Woodland Hills, and Fred H. Seitz, Yorba Linda, both of Calif., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed Apr. 6, 1971, Ser. No. 131,730

Int. Cl. B64d *11/04*

U.S. Cl. 296—1 R **9 Claims**

A vehicle servicing cart adapted for use within a vehicle that has two separate cables for attachment to various stationary anchoring stations within the vehicle and separate reels for each cable that are rotatable relative to each other on a common shaft. The reels are adapted to normally be locked against each other and a cam is provided which upon actuation disengages the reels and permits relative rotation of the reels with respect to each other when the cables are to be extended or retracted. A resilient spring is provided that interconnects the reels and the spring is wound as the reels rotate when the cables are unwound from the reels in order to permit them to be attached to the anchoring stations. The spring acts



upon the appropriate reel to cause it to rotate to wind its attached cable on the reel when the cable is detached from an anchoring station.

3,751,102

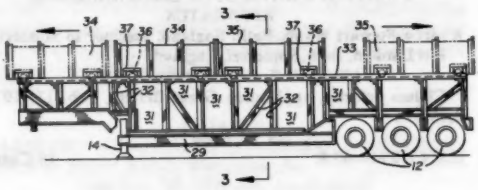
INGOT CARRYING TRAILER

Jerry L. Stoneburner, P.O. Box 277, North Jackson, Ohio

Filed Dec. 2, 1971, Ser. No. 204,212

Int. Cl. B60p *3/00*

U.S. Cl. 296—3 **5 Claims**



An ingot carrying trailer particularly adapted for transporting a plurality of hot metal ingots in upright side by side relation includes an elongated frame having a depending center area in which a rack for said ingots is positioned and spaced with respect to an insulated deck therebeneath, insulated closure panels surround said rack and a pair of longitudinally movable insulated cover sections are positioned on a longitudinal track-way for movement toward and away from said depending center area of said trailer.

3,751,103

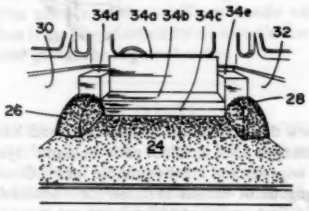
INTERIOR ASSEMBLY FOR A PICKUP CAMPER

Robert H. Robertson, 2640 Heatherwood, Dallas, Tex.

Filed May 18, 1972, Ser. No. 254,540

Int. Cl. B60p *3/38*

U.S. Cl. 296—23 R **17 Claims**



The specification discloses an interior assembly for installation in a pickup having a camper cover. A rug is shaped to fit

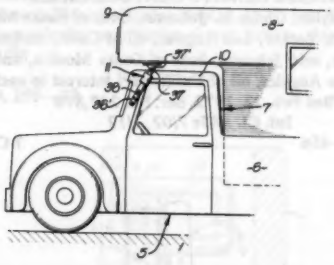
on the bottom of the pickup bed and includes curved side portions which are contoured to cover the wheel well covers of the pickup bed. A pair of elongated side panels are dimensioned to cover the interior sides of the pickup bed and include cutout portions for receiving the wheel covers of the pickup bed. A front panel is dimensioned to cover the bulkhead of the pickup bed. The side and front panels are attached to the interior sides of the pickup bed by screws or the like such that the bottom edges of the panels exert a sufficient downward force upon the edges of the rug to firmly hold the rug in place. A plurality of rectangular cushions are dimensioned for being selectively arranged on the rug as a couch or as a bed. The various portions of the interior assembly may be conveniently packaged as a compact kit for shipment to and installation by the consumer.

3,751,104

MOVEMENT CONTROL FOR PICKUP-MOUNTED VEHICLE

Quenten E. Thompson, 842 N. Cummings Rd., Covina, Calif.

Filed July 7, 1971, Ser. No. 160,412
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC **5 Claims**



Hydraulic members connect two relatively movable parts exemplified by a pickup bed and a camper mounted thereon, said members being extensible and contractable in response to movement of the parts. A cylinder connected to one part cooperates with a piston axially movable in the cylinder and connected to the other part. Oppositely biased poppets are carried by the piston. One poppet, during piston movement in one direction, bypasses hydraulic fluid from one end of the cylinder to the other end, and the other poppet, during movement in the opposite direction, bypasses hydraulic fluid from said other end to the first mentioned end of the cylinder. Bias-regulating springs for each poppet are capable of being adjusted to regulate the bypass flow.

3,751,105

CORNER CONSTRUCTION FOR VEHICLE TRAILERS

Noah M. Norman, Trussville, Ala., assignor to Altamil Corporation, Birmingham, Ala.

Filed Sept. 24, 1971, Ser. No. 183,339
Int. Cl. B62d 33/02
U.S. Cl. 296—28 M **2 Claims**

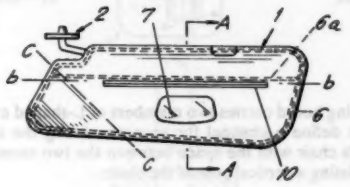
An "add-on" corner for the decks of flat bed trailers and the like which permits a manufacturer to produce trailers having truncated front corners while being able, on request, to furnish square cornered decks. The invention comprises a corner fill piece which may be secured to a truncated corner thus to "square" it off.

3,751,106

SECUREMENT OF COVERING ABOUT VEHICLE CONTOURED SUNVISOR

Gert Mahler, Radevormwald, and Gerhard Zwirner, Dusseldorf, both of Germany, assignors to Gebr Hoppich GmbH, Wuppertal-Elberfeld, Germany

Filed July 28, 1971, Ser. No. 166,681
Claims priority, application Germany, Nov. 7, 1970, P 20 54 953.5
Int. Cl. B60j 3/00
U.S. Cl. 296—97 H **12 Claims**



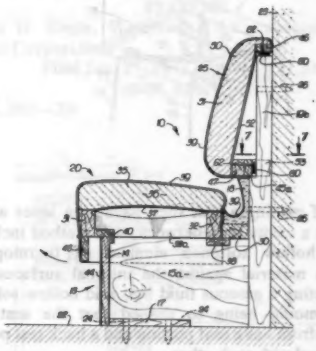
Means for securing the cover wrapping of a sunvisor to the concavely curved side of the contoured sunvisor body through bonding covering material to a structural support wire of the visor located within the deepest concave region of the body of the visor.

3,751,107

RESTAURANT BOOTH WITH SNAP AWAY BACK

Melvin A. Greitzer, Los Angeles, Calif., assignor to Imperial Data Corporation, Los Angeles, Calif.

Filed Aug. 12, 1971, Ser. No. 171,058
Int. Cl. A47c 7/02
U.S. Cl. 297—455 **1 Claim**



A restaurant booth structure is disclosed wherein only the supporting understructure of the booth including the base and vertical support members are permanently installed in the restaurant. Both the upholstered seat and back portions of the booth are removably attached to the supporting understructure so as to enable the replacement of these portions by newly upholstered portions at the site of the booth. To facilitate the replacement, the back portion of the booth is constructed to be connected by quick fasteners to the vertical support members.

3,751,108

DETACHABLE WRITING SURFACE FOR DIRECTOR'S CHAIR

Louis J. Bakanowsky, Lexington, Mass., assignor to Cambridge Seven Associates, Inc., Cambridge, Mass.

Filed May 7, 1971, Ser. No. 141,154
Int. Cl. A49b *16/00*
U.S. Cl. 297—160 **10 Claims**

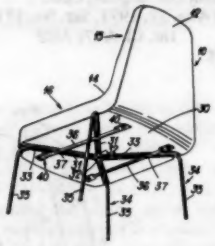
A writing board carries two members of L-shaped cross section that define a channel for accommodating the arm of a director's chair with the space between the two members accommodating a vertical post of the chair.

3,751,109

METHOD OF MAKING A SEAT SHELL

Ronald Dufton, Bushey Heath, England, assignor to Du-Al Furniture Limited, Middlesex, England

Filed Sept. 20, 1971, Ser. No. 181,751
Claims priority, application Great Britain, Oct. 2, 1970, 47,086/70
Int. Cl. A47c *3/00*, *7/14*
U.S. Cl. 297—445 **6 Claims**



A method of making a seat shell having an inner and an outer wall with a cavity therebetween, said method including expanding a hollow softened element of thermoplastic synthetic resin material against the internal surfaces of a mould by injecting a gaseous fluid into said hollow softened element, the mould being so shaped that the seat shell produced therefrom has a seat portion and a back rest portion which are integral with each other.

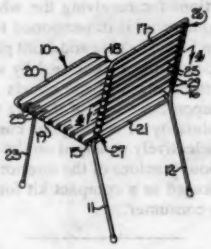
3,751,110

STRAP FASTENING ARRANGEMENT

Lawrence M. Shaw, Salisbury, N.C., assignor to Lyon-Shaw, Incorporated, Salisbury, N.C.

Filed June 5, 1972, Ser. No. 259,937
Int. Cl. A47c *7/20*, *7/14*, *31/04*
U.S. Cl. 297—452 **1 Claim**

Upholstery straps used in providing body supporting surfaces for a seating furniture piece such as a lawn chair are maintained in a desired spaced relation through the use of elongate, comb-like fastener means secured to the structural skeleton of the furniture piece. Terminal ends of the upholstery straps are wrapped about the structural skeleton of the piece and are secured by being penetrated by the teeth of the comb-like members.

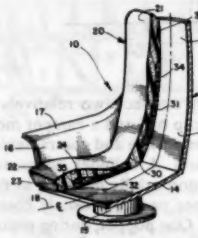


3,751,111

VARIABLE DENSITY CONTOUR CHAIR

Marvin A. Taylor, Glenn H. Johnson, both of Santa Monica, and H. Jack Becker, Los Angeles, all of Calif., assignors to said Taylor, said Johnson, both of Santa Monica, and said Becker, Los Angeles, all of Calif., part interest to each

Filed Feb. 22, 1972, Ser. No. 227,870
Int. Cl. A47c *7/02*, *1/12*
U.S. Cl. 297—456 **7 Claims**



A chair includes a cushion of relatively low density flexible material that captivates specially positioned blocks of relatively high and intermediate density flexible material in a manner to improve comfort and minimize certain discomforts of sitting.

The relatively high and intermediate density blocks are arranged in a pattern to coincide with predetermined high and intermediate load bearing regions determined from date derived from measuring a backside area of a person or a group of people.

The load is distributed so that the stronger and more sensitive prone parts of a person are subjected to proportionally greater and lesser amounts of the overall load as compared with conventional cushions of uniformly compressive material or layered materials.

3,751,112

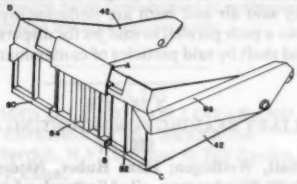
TAILGATE

Leroy G. Hagenbuch, 3910 Milbrook Road, Peoria, Ill.

Filed June 17, 1971, Ser. No. 153,964
Int. Cl. B60p *1/16*, *1/28*
U.S. Cl. 298—23 DF **4 Claims**

An improved tailgate for a rear dump vehicle having a pair of side plates that are pivotally connected to the side sheets of a dump body. A telescoping rear plate is connected to the

pivoted side plates that provides for expansion of the sidesheets of the dump body. A pair of telescoping outriggers



are coupled between the side plates and the rear pump vehicle main frame that provides ease of assembly of the tailgate on a plurality of vehicles.

3,751,113

TOOL RETAINING MEANS

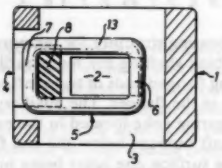
Sidney E. Proctor, High Wycombe, England, assignor to Austin Hoy and Company Limited, High Wycombe, Buckinghamshire, England

Continuation-in-part of Ser. No. 18,477, March 11, 1970, abandoned. This application Sept. 3, 1971, Ser. No. 177,645

Claims priority, application Great Britain, Sept. 11, 1970, 43,678/70

Int. Cl. E21c *25/46*

U.S. Cl. 299—92 16 Claims



A holder for a mineral mining cutter pick having a shank arranged for receipt in a socket in the holder, wherein the holder has a latch comprising a loop member arranged to surround a tool shank in the holder, and at least one resilient member e.g. of rubber co-operating with a part of the loop member to urge the loop member into engagement with the tool shank to resist removal of the shank from the socket.

3,751,114

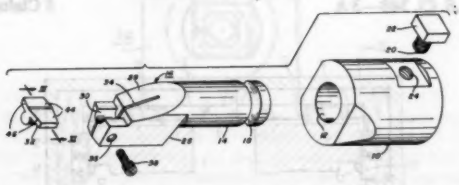
CUTTER BIT AND BLOCK

Charles S. Davis, Bridgeport, W. Va., assignor to Carmet Company, Pittsburgh, Pa.

Filed Sept. 22, 1971, Ser. No. 182,791

Int. Cl. E21c *25/48*

U.S. Cl. 299—85 7 Claims



An improved cutter bit and block for a mining or excavating machine of the type wherein bits are circumferentially spaced around a rotary cutting head or mounted on a cutting chain, characterized in that each bit has a cylindrical shank which can rotate within a cooperating bore in a bit block secured to the cutting head or chain. The cutting tool carried on the bit has a cutting edge behind the axis of the shank in the direction of movement of the cutting head or chain such that, as the angle of attack of the cutting device is changed, the bit will rotate to cause the cutting tool to cut on its forward edge at all times, eliminating wear on the sides of the bit and the production of dust within a coal mine or other similar environment.

3,751,115

TOOLS AND HOLDERS THEREFOR

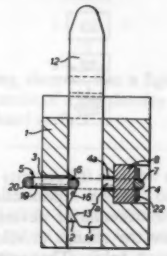
Sidney E. Proctor, High Wycombe, Buckinghamshire, England, assignor to Hoy, Austin, and Company Limited, Buckingham, England

Filed Sept. 13, 1971, Ser. No. 179,834

Claims priority, application Australia, Dec. 22, 1970, 3562/70

Int. Cl. E21c *35/18*

U.S. Cl. 299—92 10 Claims



The combination of a shanked tool and a holder therefor the holder being formed with a socket for receiving the tool shank and with a resilient latch biased in a direction transverse to the operating direction for engaging in a recess in the side of the tool shank.

3,751,116

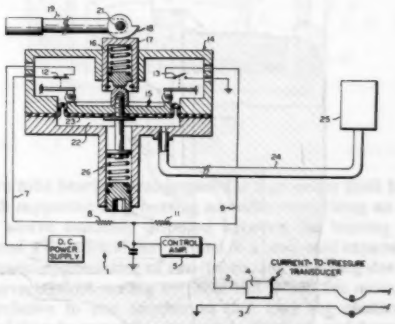
DECELERATION CONTROLLER FOR RAILWAY BRAKE SYSTEMS

Thomas H. Engle, Watertown, N.Y., assignor to General Signal Corporation

Filed Jan. 27, 1972, Ser. No. 221,344

Int. Cl. B60t *13/68*

U.S. Cl. 303—20 5 Claims

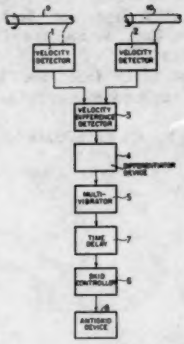


The disclosure concerns a railway brake controller which modulates the trainlined brake-controlling signal as required to maintain balance between a command force indicative of a desired rate of retardation and a feedback force developed by a liquid-filled column subject to the actual rate of retardation.

3,751,117
ANTISKID APPARATUS

Jacques Soffer, Sceaux, and Francois Tonnerieux, Fontenay Aux Roses, both of France, assignors to Societe Generale de Construction Electriques et Mechaniques (Alstom), Paris, France

Filed Nov. 18, 1970, Ser. No. 90,765
Int. Cl. B60t 8/06
U.S. Cl. 303—21 EB 4 Claims

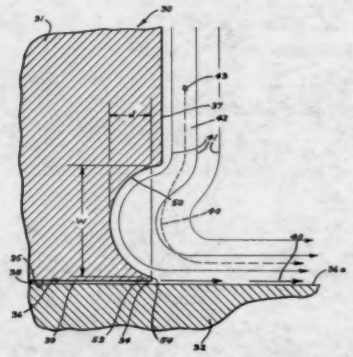


Antiskid apparatus wherein the velocity of two axles is electrically measured and a signal representing the velocity difference is fed to a differentiator device which operates a switching circuit when the change in velocity difference exceeds a predetermined value. The switching circuit then operates an antiskid device to reduce the velocity difference. A time delay is coupled to the switching circuit to maintain the switching circuit operated for a predetermined period of time after the switching circuit input is turned off (that is, after the change in velocity difference falls below a predetermined value.

3,751,118
CONTAMINANT DEFLECTION GROOVE FOR GAS BEARING

Harold E. G. Arneson, 2322 W. Lake of the Isles Blvs., Minneapolis, Minn.

Filed July 2, 1971, Ser. No. 159,225
Int. Cl. F16c 33/74
U.S. Cl. 308—5 5 Claims

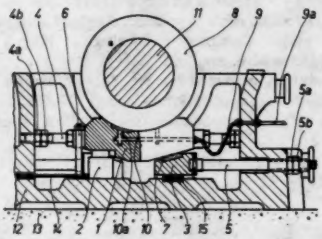


A contaminant particle deflection groove in connection with an externally pressurized gas bearing assembly comprising a sleeve and a shaft with the exhaust perimeter thereof being at the end of said sleeve and the improvement herein consisting of a groove in the face of said sleeve about said exhaust perimeter. The jet of gas exhausting from said exhaust perimeter of said sleeve along the exposed surface of said shaft entrains streams of ambient air and the contaminant particles carried by said air and both are deflected by means of said groove into a path parallel to said jet for dispersal prior to contact of said shaft by said particles of contaminants.

3,751,119
AUXILIARY BEARING FOR MOUNTING A TURBINE SHAFT

Hans Bellati, Wettingen; Hans Huber, Niederrohrdorf, and Willi Rutti, Nussbaumen, all of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Apr. 18, 1972, Ser. No. 245,241
Claims priority, application Switzerland, May 12, 1971, 7000/71
Int. Cl. F16c 17/16
U.S. Cl. 308—9 8 Claims

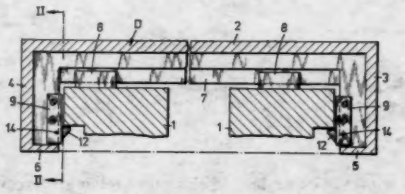


An auxiliary bearing structure for temporary use during installation of turbine shafting for temporarily supporting and aligning adjoining flanged ends of two shaft sections to be connected together at the flanges. The auxiliary bearing consists primarily of a bearing yoke located in the centroidal plane of the adjoining shaft sections below the end flanges which rest upon the bearing surface, the latter being pressure lubricated to permit turning of the shaft sections. The bearing yoke is vertically adjustable in the radial direction of the shafting in order to effect the desired alignment and can be fixed in the lateral direction after reaching the position of alignment. Means are also provided for holding the auxiliary bearing yoke in a "down" position out of contact with the shaft flanges while the turbine is in service.

3,751,120
DEVICE FOR PROTECTING THE GUIDING PATH OF A MACHINE TOOL

Lothar Kletz, Freudenberg-Lindenberg, Germany, assignor to Kabelschlepp Gesellschaft mit beschrankter Halftung, Siegen, Germany

Filed Sept. 28, 1971, Ser. No. 184,495
Claims priority, application Germany, Sept. 29, 1970, P 20 47 794.5
Int. Cl. F16c 23/02
U.S. Cl. 308—3 A 5 Claims



A device for protecting the guiding path of a machine tool, which comprises a plurality of telescopically interengaging cover boxes each having a rear wall extending perpendicularly

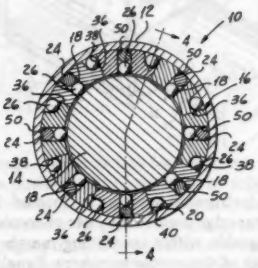
with regard to the plane of the guiding path and by means of horizontal and vertical sliding means resting on the guiding path, the vertical sliding means being angle-shaped and include slidable nose means spring urged toward the guiding path and engaging the same from behind to maintain the cover boxes in engagement with the guiding path.

3,751,121

SEGMENTAL CAGE FOR LINEAR AND LINEAR/ROTARY BEARINGS

Ted Geffner, Merrick, N.Y., assignor to The Barden Corporation, Danbury, Conn.

Filed Sept. 17, 1971, Ser. No. 181,367
Int. Cl. F16c 29/06, 33/38
U.S. Cl. 308—6 C 11 Claims



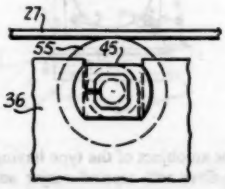
A segmental cage for linear and linear-rotary bearings in which each of a plurality of identical cast cage segments comprises a body having cylindrical inner and outer surfaces and side edges lying in radial planes with an axially extending unloaded ball path-forming recess adjacent to one edge and with curved recesses adjacent its ends leading from the axial recess into an axially extending slot formed intermediate the segment edges with the slot adapted to receive a loading roller and so formed as to provide the loaded ball path and having a pair of axially spaced circumferentially extending lugs at the other edge adapted to extend into the curved recesses of an adjacent segment to define ball transfer paths for directing balls from the unloaded path to the loaded path.

3,751,122

REPLACEABLE BUSHING FOR SANITARY CONVEYOR

Alvin H. Dubay, Rt. 2, Box 3055, Vacaville, Calif.

Filed Dec. 6, 1971, Ser. No. 205,034
Int. Cl. F16c 25/00; B65g 39/02
U.S. Cl. 308—63 2 Claims



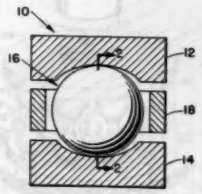
A sanitary conveyor for use with food processing machinery and including an endless belt conveyor system. The individual idler support rolls of the conveyor are mounted on bushings having a slip fit on a bracket so that they may be removed and replaced without the necessity of disassembling the conveyor completely.

3,751,123

LOW MASS ROLLING ELEMENT FOR BEARINGS

Richard J. Parker, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 24, 1971, Ser. No. 201,904
Int. Cl. F16c 33/32
U.S. Cl. 308—193 6 Claims



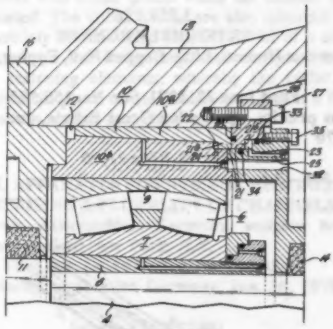
A low mass rolling element has a lightweight core with a hollow center or is made of a low density material. The core is plated to provide a hard surface.

3,751,124

STERN TUBE BEARING ARRANGEMENT FOR A PROPELLER SHAFT SUPPORTED BY A SPHERICAL ROLLER BEARING

Carl George Hanson, and Folke Gunnar Bergling, both of Savedalen, Sweden, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Sept. 29, 1971, Ser. No. 184,715
Int. Cl. F16c 23/08
U.S. Cl. 308—194 10 Claims

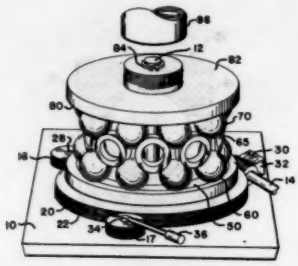


A stern tube bearing arrangement for a propeller shaft having a hub supported by a bearing assembly comprising an expansion sleeve assembly disposed between the bearing assembly and a cylindrical seat formed in a boss, said expansion sleeve assembly consisting of two interacting clamping sleeves which have tapered mating surfaces and which are movable axially relative to one another so that they are elastically deformed thereby expanding its outside diameter and decreasing its bore diameter to adjust the play between the bearing assembly and the seat, an annular member adjacent one axial end of one of said sleeves forming a circumferentially extending chamber, means for pressurizing said annular chamber thereby to effect axial movement of said clamping sleeves relative to one another.

3,751,125
KINEMATIC THRUST BEARING WITH BALLS AND ROLLERS

Bradford Howland, Rm. 20-C-007, RLE-M.I.T., Cambridge, Mass., and Howard C. Howland, 205 Winston Drive, Ithaca, N.Y.

Filed July 12, 1971, Ser. No. 161,854
Int. Cl. F16c 33/00
U.S. Cl. 308—206 10 Claims

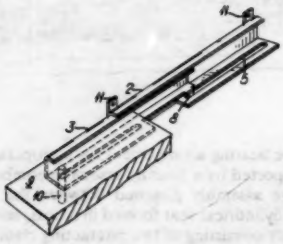


A novel thrust bearing is disclosed in which rotation is accompanied by a minimum of axial motion by reason of the averaging of defects over the various elements making up the bearing. A first race is partially filled with about two-thirds of a full complement of balls, the number of balls being odd. These balls are spaced apart by an equal odd number of grooved rollers which are held up out of contact with the race by the balls. A second row of balls each engaging two of the rollers and an upper race complete the novel structure. The construction has no resistance to radial displacement or tilting and must be used in combination with radial bearings. The construction with an even number of rollers is unstable. The construction is shown for the introduction of controlled and very small amounts of cyclic irregularities by tilting of one race.

3,751,126
EXTENDIBLE RUNNER

Leslie Gordon Hudson, Little Copped Hall, Epping, Essex, England

Filed June 22, 1971, Ser. No. 155,553
Claims priority, application Great Britain, June 23, 1970, 30,420/70
Int. Cl. F16c 21/00
U.S. Cl. 308—3.6 8 Claims

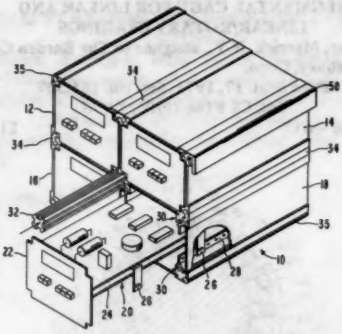


The invention relates to a telescopic runner unit for supporting a shelf or other storage member on storage supports and includes means such as a lug on one member running in a slot on the other member so that the two telescopic members forming the unit are positively engaged and do not disengage laterally during use.

3,751,127
MODULAR INSTRUMENT HOUSING

David V. C. Black, Jr., Palo Alto; Richard E. Pospisil, and George A. Powell, both of Los Altos, all of Calif., assignors to Telecommunication Technology, Inc., Sunnyvale, Calif.

Filed Sept. 10, 1970, Ser. No. 71,069
Int. Cl. F16b 12/00
U.S. Cl. 312—111 18 Claims

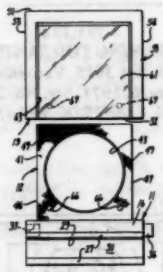


A modular instrument housing is formed from universal elongated corner edge members by use of combining members which are adaptable within combining member slots located along the length of the corner members. Panel receiving slots are also provided in the corner members for inserting panels to form the housing module surfaces. A single instrument housing can be formed of a plurality of modules can be combined together to form a composite instrument housing.

3,751,128
DISPLAY CASE AND ASSEMBLY THEREOF

James R. Skinner, Cupertino, and Mark O. Ultz, Mountain View, both of Calif., assignors to M. U. Engineering & Mfg., Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 148,497, June 1, 1971, abandoned. This application Jan. 20, 1972, Ser. No. 219,235
Int. Cl. A47f 3/00
U.S. Cl. 312—114 25 Claims

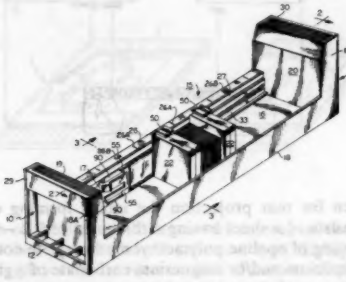


Display case for an object of the type having spaced parallel generally planar first and second major surfaces having a member which is provided with an opening therein which is sized to receive the object to be displayed with the member having first and second major spaced apart parallel planar surfaces which are generally flush with the first and second major surfaces of the object placed within the opening and having an enclosure mounted on the member and generally enclosing the member with the enclosure having a side wall with an opening therein to permit the member to be inserted into and removed from the enclosure.

3,751,129
CARD TRAY

David M. Wright, Shewsbury, and Carl J. Dean, Southbridge, both of Mass., assignors to Wright, Barry, Corporation, Watertown, Mass.

Filed Oct. 20, 1971, Ser. No. 190,927
Int. Cl. H41b 63/00; B42f 9/00
U.S. Cl. 312—185 11 Claims

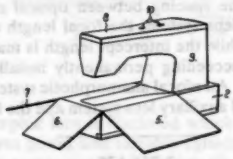


A plastic storage drawer or tray for data cards of documents provided with a positionable compressor or follower made of molded plastic elements. The drawer or tray supports a longitudinal guide track or channel, the compressor having integral track-engaging flanges and a releasable locking shoe for holding the compressor in adjusted position against the cards. The plastic compressor assembly encloses a pivoted locking lever carrying the locking shoe, and a spring normally urging the shoe against the longitudinal guide track. The locking shoe is shaped to permit the compressor or follower to be positioned without restraint toward the stack of cards in the tray. The guide track may comprise a metallic strip attached to one side wall of the drawer or tray. The bottom of the drawer is provided with reentrant shaped feet which cooperate with raised ledges on the top of the drawer to permit a series of drawers to be securely stacked one on the other vertically.

3,751,130
APPARATUS AND CARRYING CASE ASSEMBLY

Marcel Fresard, Geneva, Switzerland, assignor to Nefina S.A., Fribourg, Switzerland

Filed Dec. 15, 1971, Ser. No. 208,082
Claims priority, application Switzerland, Dec. 29, 1970, 19241/70
Int. Cl. A47b 95/02, 21/00; A47g 19/26
U.S. Cl. 312—244 3 Claims

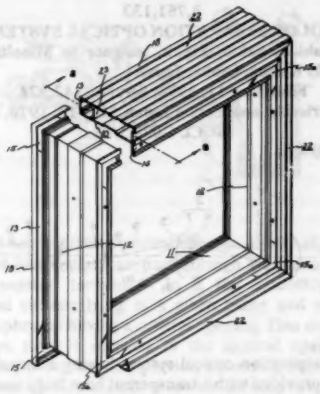


The case has the general shape of a bell open at its lower portion to receive the apparatus. The case has a handle on its upper surface for carrying the apparatus housed inside the case, this handle being provided with means coupling it directly to the apparatus and held on the case by elastic means. The handle of the case is U-shaped and has two bayonet connectors housed in respective arms of the U. The upper portion of the apparatus has apertures to receive the ends of the bayonet connectors, the handle having at least one manipulating member for the bayonet connectors.

3,751,131
RECTANGULAR WALL CABINET FOR RECESSED OR SURFACE MOUNTING

Carl J. Denker, West Chester, and Ernest F. Ohlhauser, Cincinnati, both of Ohio, assignors to The Celotex Corporation, Tampa, Fla.

Filed Aug. 31, 1971, Ser. No. 176,501
Int. Cl. A47b 67/02; A47f 5/08
U.S. Cl. 312—242 6 Claims

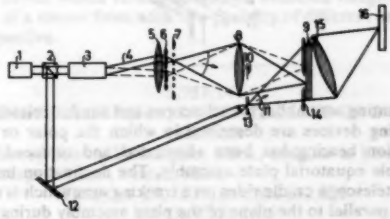


A rectangular cabinet, such as is used as an encasement for apartment type multiple mail box units or the like. The cabinet body is composed of top, bottom and side members mitercut from a strip of accurately dimensioned sheet material of special configuration, and assembled into a rectangular cabinet structure by means of miter reinforcing elements set into channels in abutting ones of said members, and secured in place. Said members provide the cabinet with a front flange to rest against the wall as a face frame to cover the opening in recessed mounting, and a back flange for securing the cabinet in place. The said members also provide fastening elements for engagement with collar pieces when the cabinet is to be surface mounted. The collar pieces are also mitercut from a strip of accurately dimensioned sheet material of a different configuration from the body strip, and are provided with cooperating fastening elements, whereby the collar pieces may be snapped in place on said cabinet to give it a finished appearance when surface mounted.

3,751,132
OPTICAL APPARATUS FOR SYMBOL REGONITION COMPRISING A PLURALITY OF CHANNELS

Gunther Croh, Alsterredder, Germany, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,454
Claims priority, application Germany, Jan. 30, 1970, P 20 04 263.1
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 6 Claims



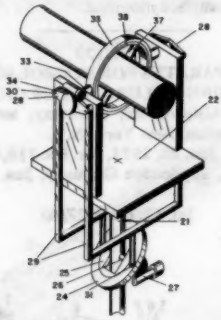
The invention relates to an optical apparatus for symbol recognition comprising a plurality of channels which include

holographic filters. The Fourier spectrum of the symbol to be examined is produced in the plane of the various spatially separate filters by forming an image of a matrix of illuminated diaphragms in the filter plane, the individual diaphragms being illuminated, for example, mutually incoherently. The individual diaphragms of the matrix may be sequentially illuminated by means of an electronically controlled light deflector, for example a digital light deflector.

3,751,133
COLOR SEPARATION OPTICAL SYSTEM
Hisashi Nishino, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 11, 1971, Ser. No. 142,321
Claims priority, application Japan, May 13, 1970, 45/40672
Int. Cl. G02b 5/28
U.S. Cl. 350—54 **13 Claims**

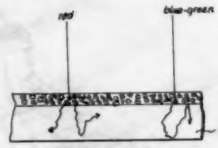
A color separation optical system having a mosaic shaped color filter provided with a transparent base body and having a dichroic filter provided on one of its sides so as to improve its permeability and the spectral permeable characteristics and the other surface of the transparent base body is neither parallel nor concentric to the filter side. The light ray of the reflected light ray in said dichroic filter, which is reflected again by the back side of said transparent base body is stopped from entering the incident picture angle of the relay lens in the color separation optical system, preventing ghosts.

3,751,134
TRACKING MOUNTS FOR CELESTIAL RAY DETECTING DEVICES
Elihu Hassell McMahon, 1870 Schieffelin Ave., Bronx, N.Y.
Filed Sept. 2, 1971, Ser. No. 177,356
Int. Cl. G02b 23/16
U.S. Cl. 350—83 **12 Claims**



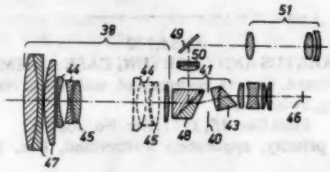
Mounting assemblies for telescopes and similar celestial ray detecting devices are described in which the polar or right ascension bearing has been eliminated and replaced by a rotatable equatorial plate assembly. The declination bearing of the telescope cradle rides on a tracking arm which is maintained parallel to the plane of the plate assembly during rotation of the latter by a following rod. A precession carriage can be provided as the telescope cradle to permit greater versatility.

3,751,135
REAR PROJECTION SCREEN
Erik Clausen, and Johannes Clausen, both of DK-4540 Farevejle, Denmark
Filed June 23, 1972, Ser. No. 265,453
Claims priority, application Denmark, June 25, 1971, 3133/71
Int. Cl. G03b 21/60
U.S. Cl. 350—117 **2 Claims**



A screen for rear projection the image forming element which consists of a sheet having a thickness of 0.2 – 1.5 mm and consisting of opaline polymethyl methacrylate containing dispersed calcium and/or magnesium carbonate of a grain size less than 1 μ, said sheet either having a covering at the rear side consisting of a transparent lacquer having a thickness of 10 – 100 μ wherein glass particles having a grain size of 5 – 50 μ are dispersed or glass particles of said kind being dispersed in the material of which the sheet consists.

3,751,136
VARIABLE FOCAL LENGTH ANAMORPHOTIC CINECAMERA SYSTEMS
Kurt Kirchhoff, Lullkamp 45, 2 Hamburg 53, Germany
Filed Aug. 27, 1971, Ser. No. 175,513
Claims priority, application Germany, Sept. 1, 1970, P 20 43 193.0
Int. Cl. G02b 13/12, 15/16
U.S. Cl. 350—181 **4 Claims**

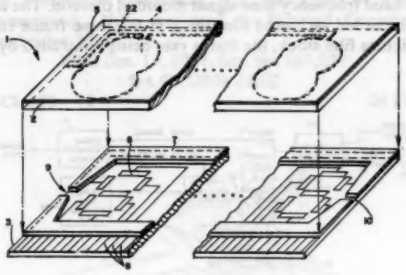


A variable focal length cinecamera system consisting of an afocal auxiliary lens system by means of which, through modification of the spacing between optical elements constituting the said lens system, the focal length of the system can be changed while the intercept length is maintained constant, and of a succeeding permanently installed basic lens focused at infinity. An afocal anamorphotic system is provided between the afocal auxiliary lens system and the basic lens.

3,751,137
LIQUID CRYSTAL DISPLAY DEVICE
Eugene T. Fitzgibbons, Anaheim, and Raymond P. Slowinski, La Habra, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.
Filed Oct. 18, 1971, Ser. No. 189,991
Int. Cl. G02s 1/16
U.S. Cl. 350—160 LC **4 Claims**

The device has top and bottom plates including one projecting edge for supporting conductor input leads. The plates are separated as well as secured together by a glass frit raised border. A liquid crystal material is injected, via openings in the border along the edge of the two plates, into the space

between the two plates. Transparent and conductive segments comprising the display characters are formed on the inner surface of one of the plates. Conductive elements corresponding

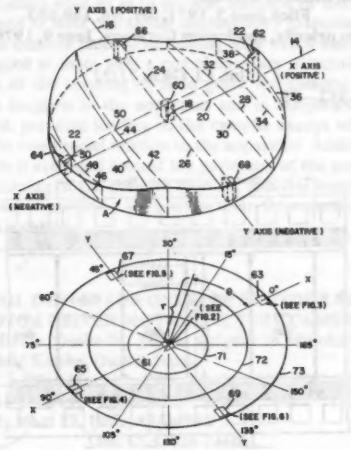


to each of the display characters are formed on the inner surface of the opposite plate. A reflective type display includes a reflecting layer on the outer surface of the second plate.

3,751,138
VARIABLE ANAMORPHIC LENS AND METHOD FOR CONSTRUCTING LENS

William E. Humphrey, Oakland, Calif., assignor to Humphrey Research Associates, Oakland, Calif.

Filed Mar. 16, 1972, Ser. No. 235,134
Int. Cl. G02b *3/04, 3/10, 13/08*
U.S. Cl. 350—181 **6 Claims**

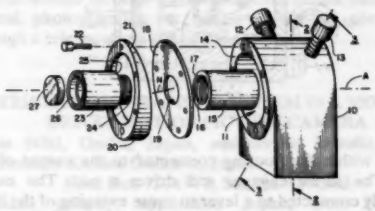


An anamorphic lens is disclosed which generates variable cylindrical lens power and variable cylindrical lens rotational alignment over incremental viewpoints chosen through its surface. Cylinder power and rotation is a function of the displacement distance and angle of a selected viewpoint segment from a neutral viewpoint segment through the lens. The disclosed lens element finds a preferred use in confronting relation to an identical lens element having complementary curvature. When identical lens elements are confronted, so as to provide an optical path of view through overlapping portions of the confronted lens elements, translational displacement of the confronted elements provides the same cylindrical lens power and cylindrical lens rotation over the entirety of the overlapped lens elements. Simplified methods of manufacturing the complex lens surface are disclosed.

3,751,139
OPTICAL MOUNTING DEVICE FOR USE IN LASER SYSTEMS

Edward Phillip Malherbe, Los Angeles, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,716
Int. Cl. G02b *7/02*
U.S. Cl. 350—252 **4 Claims**

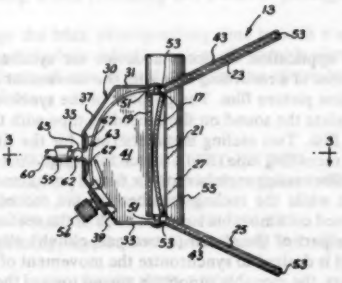


A rigid housing has a central passage axially aligned so that laser light in a system can pass through the passage. One end of the passage terminates in a flat smoothly machined peripheral surface lying in a given plane and supporting a metal diaphragm having a central opening. One end portion of a support tube is secured in the central opening of the diaphragm, the other end portion extending into the passage of the housing. Adjustment screws extending into the housing serve to apply forces to circumferentially spaced points on the other end of the support tube thereby enabling exact axial alignment of an optical device carried in the support tube with the axis of the laser system.

3,751,140
OPTICAL DEVICE

Milton Berlin, Forest Hills, and Lawrence M. Rheingold, Baldwin, both of N.Y., assignors to Templet Industries Inc., Plainview, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,403
Int. Cl. G02b *5/08*
U.S. Cl. 350—305 **7 Claims**



A device which reflects magnified reflected images of the eyes of a viewer from each of a plurality of different angles of perspective.

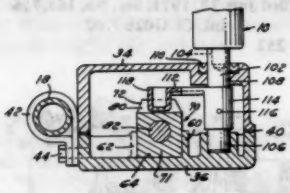
3,751,141
REMOTE ELECTRICALLY CONTROLLED TWO-WAY MIRROR

J. Murray Brown, Huntington, Mich., assignor to Electronics Enterprises, Inc., Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 192,829
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 **11 Claims**

The mirror assembly includes support structure for mounting on a vehicle. The support structure includes means for

pivotally mounting a mirror thereon. Actuating mechanism driven by a reversible electric motor is provided for changing the angular adjustment of the mirror. The actuating mechanism is mounted within a sealed housing. A screw is



provided within the housing connected to the output of the motor. The screw engages and drives a nut. The nut is cammingly connected to a lever to cause swinging of the lever upon movement of the nut. The lever is, in turn, connected to the mirror for pivoting the mirror for adjustment purposes.

3,751,142

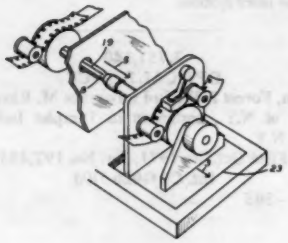
SYNCHRONIZING DEVICE

Gilbert Roller, 1 W. 67th St., New York, N.Y.

Continuation-in-part of Ser. No. 851,125, July 14, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 201,681

Int. Cl. G03b *31/04*

U.S. Cl. 352—12 **10 Claims**



This application discloses a device for synchronizing the movement of a recording tape with the movement of a section of motion picture film. The purpose of the synchronization is to correlate the sound on the recording tape with the pictures on the film. Two reeling members (one for the film and one for the recording tape) and a clutch to engage the two are provided. The reeling member for the film is positioned on a fixed support while the reeling member for the recording tape is positioned on a movable support. Each of the reeling members has one part of the clutch (a two part clutch) attached to it. When it is desired to synchronize the movement of the reeling members, the movable support is moved toward the stationary support to cause the two parts of the clutch to engage and couple the reeling members together.

3,751,143

SYNCHRONIZED SOUND AND PICTURE FILM RECORDING AND PROJECTION SYSTEM

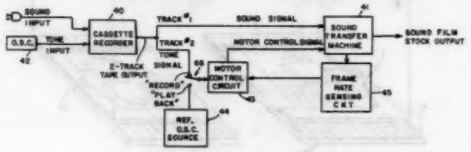
Jon P. Rosenfeld, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 11, 1972, Ser. No. 270,772

Int. Cl. G03b *31/00*

U.S. Cl. 352—12 **19 Claims**

A sound motion picture film system in which the motion picture camera and the sound recorder means are operated as independent physical entities during the picture taking and sound recording process. The camera is synchronized to produce a preselected frame rate, preferably at 24 frames per second, through appropriate self-containing synchronizing circuitry associated therewith. The sound is recorded on one track of a two-track magnetic tape the other track of which has a fixed frequency tone signal recorded thereon. The sound is re-recorded on sound film stock at the same frame rate as the picture film stock, the frame rate being controlled by self-



contained synchronizing circuitry using the tone signal as a reference signal. The picture film stock and the sound film stock can then be played back using appropriate projector and sound playback means which are operated in synchronism via circuitry driven by the same a-c line source. Accordingly, no interconnecting cables carrying synchronizing signals are required between the sound recording equipment and the camera during the picture taking process.

3,751,144

COPYING CINEMATOGRAPHIC FILM

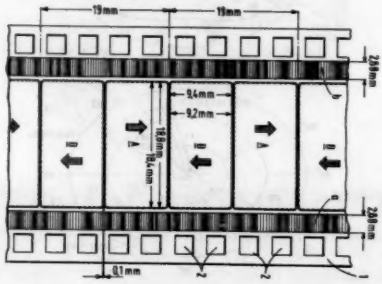
Georg Greger, Munich, Germany, assignor to Constantin Film GmbH, Munich, Germany

Filed June 3, 1971, Ser. No. 149,603

Claims priority, application Germany, June 9, 1970, P 20 28 373.2

Int. Cl. G03b *21/32*

U.S. Cl. 352—38 **3 Claims**



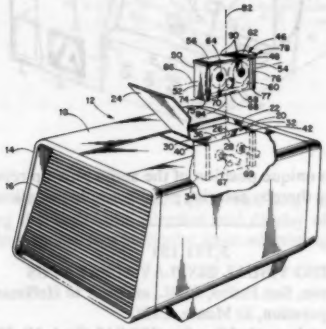
A skip-frame film is produced starting with a broad screen negative film exposed in a conventional manner. The negative film is suitable for the production of wide screen copies in a conventional manner. The images occurring one after the other on the negative film are reduced optically without distortion so as to have a height equal to half the conventional four perforation transport step and an image breadth which allows the accommodation of two sound tracks, one along each edge of the film. The images are arranged in two alternating series. The first series are copied in a first copying operation. The following series is copied in a second copying operation with the film images moving in the opposite direction. Intermediate spaces between the individual images are omitted or filled in.

3,751,145

PHOTOGRAPHIC SYSTEM EMPLOYING AN IMPROVED FILM HANDLING CASSETTE AND CASSETTE-RECEIVING APPARATUS

Henry J. Salvador, Hasbrouck, N.J., and James M. Conner, Mamaroneck, N.Y., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 13, 1971, Ser. No. 207,257
Int. Cl. G03b 23/02
U.S. Cl. 352—72 24 Claims



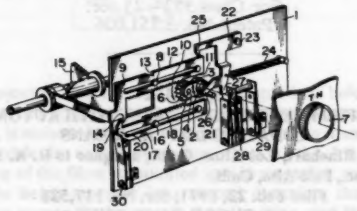
A photographic system including a motion picture film handling cassette and apparatus having a slot-like opening configured to slidably receive the cassette when it is arranged in a given predetermined orientation thereto. The cassette comprises a flat housing having a pair of opposed planar faces, with a rib-like protuberance extending across one of the faces near its trailing edge so as to prevent insertion of this edge in the slot, and at least one tactile discontinuity extending along one of the cassette faces to its leading edge which discontinuity is adapted to mate with a complementary discontinuity in one edge of the opening so as to guide the cassette into its operative location in the apparatus and in cooperation with the top rib prevents loading of the cassette except when it is oriented in one spacial relation to the apparatus. Additionally, the top rib is extended around the perimeter of the cassette to permit grasping of the cassette edge for removal from the apparatus and to provide a light baffle when the cassette is in its operative location.

3,751,146

CONTROL DEVICE FOR OVERLAP PHOTOGRAPHY IN MOTOR DRIVEN MOTION PICTURE CAMERA

Hiroshi Hirata, Osaka-fu, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1971, Ser. No. 125,058
Claims priority, application Japan, Mar. 17, 1970, 45/24991; Mar. 17, 1970, 45/24992
Int. Cl. G03b 21/36
U.S. Cl. 352—91 4 Claims



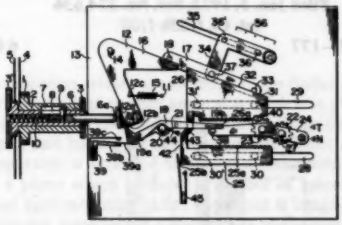
A control device to effect overlap photography in a motor driven motion picture camera sequentially operable to effect a fade-out photography, a film rewinding, and a fade-in photography. By manually changing-over the camera to a fade-out photography, the fully opened shutter means is closed by the control device for taking a fade-out picture and is locked at the fully closed aperture. After locking of the shutter means is terminated, rewinding of the film in which the fade-out picture is taken is automatically actuated by the control device for preventing exposure of the rewinding film during film rewinding, and the power source is opened upon termination of film rewinding. Locking of the shutter means is released by the control device through a changing-over of the camera to a normal photographing for taking a fade-out photography through a release operation of the camera.

3,751,147

TRICK PHOTOGRAPHING SYSTEM IN A MOTOR DRIVEN MOTION PICTURE CAMERA

Yukio Miki, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Oct. 15, 1971, Ser. No. 189,503
Claims priority, application Japan, Oct. 20, 1970, 45/103599
Int. Cl. G03b 21/36
U.S. Cl. 352—91 4 Claims



A trick photographing system in a motor driven motion picture camera provided with a reversible overlap mechanism which comprises two time setting plates, a swing lever and an operating plate which is functional not only to open and close the shutter but also to make operative a switch for switching a motor circuit from the normal direction to the reverse direction or vice versa, whereby, a sequence a fade-out photographing, a film rewinding and a fade-in photographing is effected.

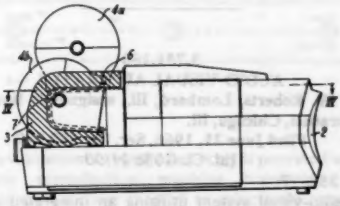
To change the trick photographing time in such a system, supporting point of the swing lever is made slidable along both sliding surfaces of one of said time setting plates and said operating plate.

3,751,148

CINEMATOGRAPHIC PROJECTOR

Louis Thevenaz, Les Rasses, Switzerland, assignor to Balex International S.A., Vaud, Switzerland

Filed Oct. 5, 1971, Ser. No. 186,285
Claims priority, application Switzerland, Oct. 19, 1970, 15389/70
Int. Cl. G03b 21/04
U.S. Cl. 352—123 11 Claims



A cinematographic projector comprises a light source, an objective, a film drive mechanism, a movable support for cas-

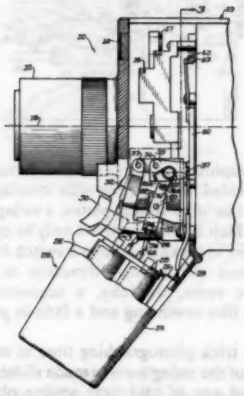
settes containing a spool of film, a temporary receiving member for the projected film, and a control mechanism for these devices. The movable support of the cassettes is displaceable horizontally in a direction perpendicular to the optical axis of the objective and comprises vertical compartments juxtaposed in the direction of displacement of the movable support and open at their upper end. Each compartment includes adjacent one end of its open upperedge, a first support member around which the cassette can pivot and a second support member withdrawing when the compartment is placed in extension of the optical axis of the projector. The cassettes in waiting position above the compartments and resting on the first and second support members tilt into their respective compartment around the first support member and are placed in film delivery position when the compartment is brought into the extension of the optical axis of the projector.

3,751,149

CAMERA SHUTTER CONTROL SYSTEM

Arthur C. Mueller, Niles, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,636
Int. Cl. G03b *1/00*
U.S. Cl. 352—177 **6 Claims**



A shutter control system for controlling the exposure of film in a motion picture camera. The system includes shock absorbing apparatus for stopping the shutter in a selected position with minimum impact forces, and apparatus to drive the shutter to the selected position regardless of the point in the operating cycle at which the system is stopped by the camera user. The system further includes an over-center spring to eliminate camera chatter by positively locating the system components in either a run or a stopped position.

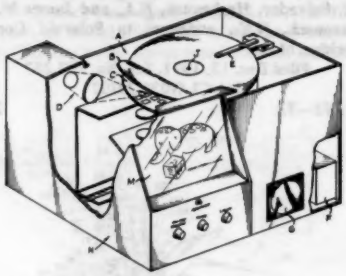
3,751,150

AUDIO-VISUAL APPARATUS

Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 21, 1966, Ser. No. 559,247
Int. Cl. G03b *21/00*
U.S. Cl. 353—7 **8 Claims**

An audio-visual system utilizing an integrated audio and visual program unit, the latter including a record disc and a disc carrying projectable transparencies. The disc carrying images is either formed with or connected to a cam which is adapted to cooperate with the cam follower controlling the position of the audio pick-up. For each position of the image



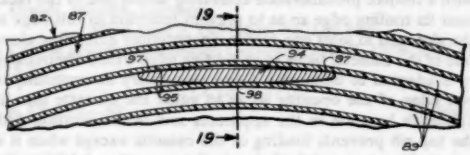
disc, there is a unique position of the audio pick-up relative to the record disc thereby assuring precise synchronization.

3,751,151

AUDIO VISUAL DISPLAY APPARATUS

Tor H. Petterson, San Pedro, Calif., assignor to Hoffman Electronics Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 859,044, Sept. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 821,579, May 5, 1969. This application Mar. 1, 1971, Ser. No. 119,790
Int. Cl. G03b *31/06*
U.S. Cl. 353—19 **8 Claims**



An audio and visual display apparatus which utilizes a cartridge having one or more picture transparencies surrounded by a rotatable recording disc including a drive track on one side and a sound track on the opposite side, the cartridge being insertable in a projector with the transparency in alignment with the optical axis of the projector. A drive wheel engages the drive track at three spaced points to maintain a predetermined azimuth relation between the sound track and the sensing element of a cooperating sound pickup unit. The rotatable recording disc of one embodiment having a mounting means so arranged as to permit translatory movement as well as rotary movement with respect to the transparency.

ERRATUM

For Class 353—25 see:
Patent No. 3,751,006

3,751,152

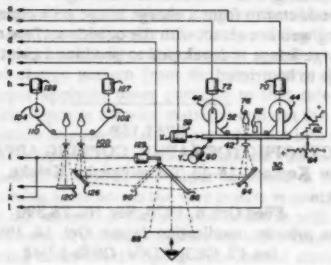
MICROFILM READER APPARATUS WITH AUTOMATIC UPDATING DISPLAY MEANS

Louis P. Rinehart, Los Altos, Calif., assignor to R. A. Morgan Co., Inc., Palo Alto, Calif.

Filed Feb. 22, 1971, Ser. No. 117,521
Int. Cl. G03b *23/08, 23/12*
U.S. Cl. 353—26 **7 Claims**

A microfilm reader system for simultaneously scanning a first strip of film, containing a first set of data photographically stored thereupon, and a second strip of film, containing a second set of data for updating certain portions of the data

stored on the first film, to locate a particular image on each film and then preferentially display one of the images. The



system includes electronic data handling apparatus for enabling the automatic selection and display of a particular image in response to a particular input address signal.

3,751,153

PROJECTOR

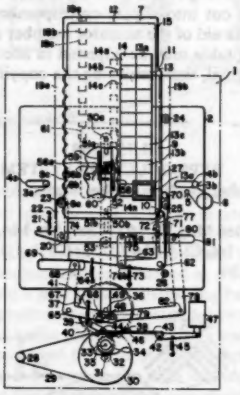
Morihisa Naito, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Sept. 8, 1970, Ser. No. 70,161

Claims priority, application Japan, Sept. 18, 1969, 44/75618; Sept. 18, 1969, 44/75619; Sept. 18, 1969, 44/75620; Sept. 18, 1969, 44/75621; Sept. 18, 1969, 44/90389

Int. Cl. G03b *23/08, 21/00*

U.S. Cl. 353—27 6 Claims



A projector wherein a magazine adapted to hold two or more rows of projectable films, each having a series of frames therein, is mounted on a movable plate in such a manner as to be movable in a first direction, that is, the longitudinal direction of the films as mounted in said magazine, said movable plate being movable in a second direction, that is, the direction perpendicular to said first direction, and the frames of said films are projected one after another successively on movement of said magazine in the first direction, movement of said movable plate in the second direction and return movement of said magazine in a direction opposite to said first direction.

3,751,154

AUTOMATIC RANGEFINDER ELECTRONIC CIRCUITRY

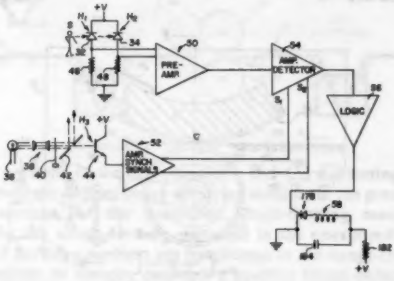
Jerome A. Frazee, Palo Alto, and Howard E. Murphy, Redwood City, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 743,370, July 9, 1968, abandoned.

This application July 13, 1970, Ser. No. 56,196

Int. Cl. G01c *3/00*

U.S. Cl. 356—1 5 Claims



This invention relates to automatic range finder circuitry for cooperative utilization with apparatus, such as a photographic camera or the like, using triangulation for range distance measurement, and having an automatic range finder mechanism. The apparatus is arranged to sweep a collimated light beam across a plane which includes a subject of interest, and the reflected light returning to the apparatus is imaged on spaced photoelectric transducers differentially connected to produce a varying electrical signal. The range finder mechanism includes a cam adapted to move as a function of the sweeping light beam. When the reflected light falls equally on the photoelectric transducers the range distance has been established.

The present invention supports this apparatus by providing circuitry for detecting the instant that the reflected illumination on the photoelectric transducers is equal, and for providing an output signal which is used to lock the cam against further displacement. The range distance intelligence, defined by the locked cam position, can then be utilized for any convenient purpose.

3,751,155

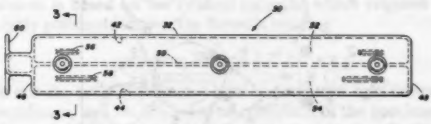
PRE-DEVELOPMENT EXPOSURE ASSEMBLY

Karl E. Liechty, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,245

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 3 Claims

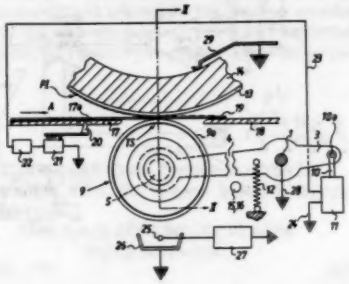


A pre-development exposure assembly is provided within an electrostatic reproduction machine transverse to the photoconductive surface thereof to selectively expose side portions of the photoconductive surface in response to a signal generated by a switch responsive to the dimension of an image receiving member being transported therethrough.

3,751,156
ELECTROSTATIC COPYING APPARATUS WITH MEANS FOR PREVENTING CONTAMINATION OF TRANSFER MATERIAL

Roland Szostak, Gruenwald, and Wilm Krueger, Graefelfing, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 24, 1972, Ser. No. 300,376
Claims priority, application Germany, Oct. 21, 1971, P 21 52 500.8
Int. Cl. G03g 15/00
U.S. Cl. 355—3 12 Claims

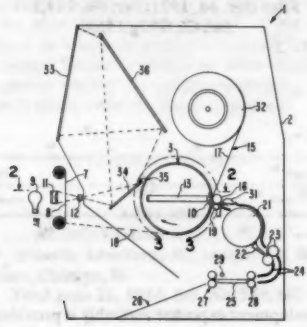


An electrostatic copying apparatus wherein an idler roller is movable toward and away from a rotary cylindrical xerographic surface carrying powder images for transfer onto a series of discrete sheets of transfer material. A scanning device is located upstream of the transfer station for powder images to effect a delay of the movement of roller toward the xerographic surface until the leading portion of an oncoming sheet is about to reach or reaches the transfer station and to effect a delay of the movement of roller away from the xerographic surface until the trailing portion of a sheet which is in the process of receiving a powder image is about to reach or moves only slightly beyond the transfer station. This insures that the powder images cannot be transferred onto the dielectric layer of the roller and prevents a contamination of the rear sides of next-following sheets.

3,751,157
ELECTROGRAPHIC PRINTER

Floyd O. Johnson, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 8, 1971, Ser. No. 132,386
Int. Cl. G03g 15/00
U.S. Cl. 355—3 9 Claims

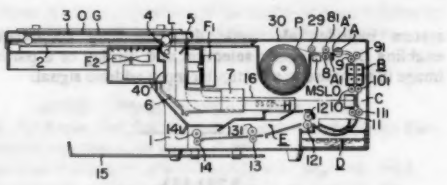


In an electrostatic copying machine, a transparent cylindrical drum is coated with a layer of transparent conductive material, which serves as a conductive electrode, and which in turn is coated with a photoconductive layer. Optical images to be printed are projected along the axis of the drum to a mirror which reflects them radially onto a thin strip portion of the inside of the photoconductive layer through the transparent layers. Charge is conducted through the illuminated photoconductor to form a charge image on a charge retentive recording web in contact with the outside surface of the drum. The charge image is developed to produce a print of the optical image to be printed.

3,751,158
ELECTROPHOTOGRAPHIC COPYING APPARATUS

Shigehiro Komori, 14-40 Tsutsujigaoka Koloka, Yokohama, Japan

Filed Oct. 6, 1970, Ser. No. 78,390
Claims priority, application Japan, Oct. 14, 1969, 44/82028
Int. Cl. G03g 15/04; G03b 27/48
U.S. Cl. 355—8 6 Claims

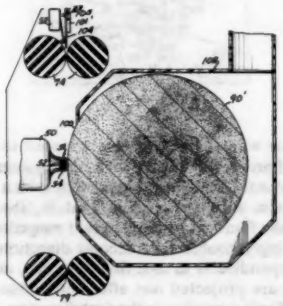


An electrophotographic copying apparatus of the type having a reciprocally movable original supporting table and using a roll of photosensitive paper. The apparatus includes an actuator member provided on the original supporting table for setting an original on the supporting table in accordance with the size thereof, means for cutting the roll of photosensitive paper in accordance with the size of the original on the supporting table while a through-slit exposure is being effected, and means for stopping the original supporting table upon completion of the exposure, whereby the roll of photosensitive paper may be cut into sheets corresponding in size to the original with the aid of the actuator member and the stroke of the supporting table may be adjusted in accordance with the size of the original, thus achieving the copying operation at a greater speed.

3,751,159
REPRODUCTION SYSTEM

William G. Fisher, 1619 E. John Wesley Ave., College Park, Ga.

Filed May 19, 1971, Ser. No. 144,743
Int. Cl. G01d 15/06; G11b 5/30
U.S. Cl. 355—20 18 Claims



A machine for reproducing the visual image on documents onto a paper substrate including a television camera for

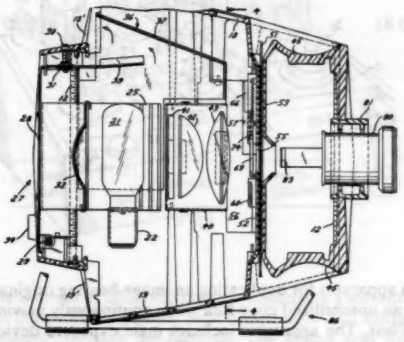
scanning the visual image on a document and converting the visual image into a corresponding electrical video signal; a cathode ray printing tube having a wire matrix; a control circuit electrically connecting the camera to the cathode ray tube to cause the wire matrix to be electrically charged in a pattern corresponding to the mirror image of the visual image on the document, a conveyor for selectively moving the paper substrate by and closely adjacent to the wire matrix to impose the electrical charge pattern from the wire matrix thereon, and a developer applying toner particles to that side of the paper substrate opposite the wire matrix to convert the electrical charge pattern imposed on the paper substrate into a visual image. The developer may include a cylindrical roll defining a driving surface for engaging the paper substrate at the wire matrix and forcing same across the wire matrix in contact with the wires of the matrix. A plurality of cameras with a corresponding number of printing cathode ray tubes may be used for reproducing multi-color copies. The control circuit may include microwave transmitting and receiving station to produce a facsimile system.

3,751,160

GENERAL ARRANGEMENT FOR PROJECTOR

Eugene Martinez, Irvington-on-Hudson, N.Y., assignor to Robert H. Reibel, Croton-on-Hudson, N.Y., a part interest

Continuation of Ser. No. 715,621, March 25, 1968, Pat. No. 3,520,599. This application Feb. 11, 1970, Ser. No. 10,346
Int. Cl. G03b *21/16, 21/00*
U.S. Cl. 353—52 **15 Claims**



A projector having a molded plastic outer case which is supported by a curved steel stand which also serves as an elevating device and carrying handle. The projector can be tilted simply by sliding it up on the curved stand and locking it with two knobs. An electric lamp is mounted at a center location within the case and a pair of heat dissipating baffle plates are positioned on opposite sides of the lamp. A cover is positioned over the lamp and baffle plates to direct the cooling air rising adjacent the lamp toward the rear of the projector. A film advance mechanism is housed in the case and includes an arm which engages the film sprocket holes only during the advancing operation.

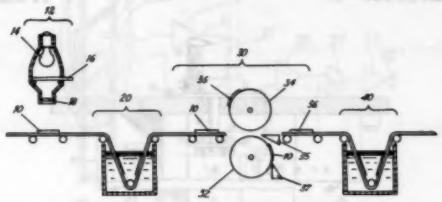
3,751,161

PHOTOGRAPHIC IMAGE TRANSFER APPARATUS

Elliot Berman, Braintree, and Carl F. Ekman, Bedford, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Division of Ser. No. 38,221, May 18, 1970, Pat. No. 3,711,282. This application Mar. 15, 1972, Ser. No. 224,366
Int. Cl. G03b *27/32*
U.S. Cl. 355—27 **11 Claims**

Processes and apparatus for producing an image and systems for practicing these processes comprising (1) exposing a copy medium comprising a photosenstive photoconductor to thereby activate the exposed portions thereof, (2) contacting this medium with image-forming materials which undergo an oxidation-reduction type reaction when contacted with the activated portions of the copy medium to thereby deposit on these portions an image which differs in solubility from the unreacted image-forming materials in the non-exposed portions of the copy medium, and (3) contacting this copy medium with an image receiving medium in the presence of a solvent for the unreacted image-forming materials whereby the image-forming materials in the unexposed portions of the copy medium are transferred to the image-receiving medium to thereby establish a positive image-pattern in the image-receiving medium.

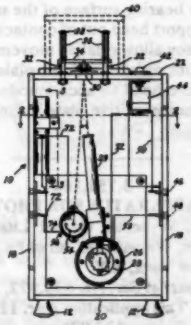


3,751,162

REFRACTOMETER AND REFLECTOMETER

Richard H. Long, 1428 E. Park St., Grants Pass, Oreg.

Filed Mar. 13, 1972, Ser. No. 234,025
Int. Cl. G01n *21/48*
U.S. Cl. 356—30 **5 Claims**



An instrument is provided, primarily as a refractometer, and which has the unique capability of distinguishing and identifying finished gems and gem materials by their refractive index and/or ratio of reflected light to projected light, and for exposing spurious imitations. For gem stone analyzing purposes the instrument is based on the Fresnel formula, which requires a flat highly polished surface, the formula reading

$$n = (r-1)^2/(r+1)^2$$

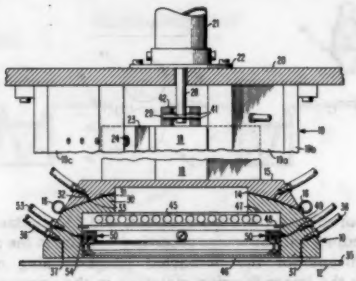
where n is the ratio of reflected light to projected light at normal incidence, and r is the index of refraction of the specimen being tested. If r and n are plotted as abscissas and ordinates, respectively, the resulting curve is almost linear in the crucial range between $r = 1.5$ and $r = 3$, with slopes of 0.128 and 0.125, for the respective stated values of r. An electronic system is devised in which the read-out is proportional to n, and is substantially proportional to r throughout the range of interest. The light is necessarily projected upon a flat facet of the specimen a little off normal incidence, but this has little effect upon the read-out.

3,751,163

STEP AND REPEAT APPARATUS WITH GAS BEARING SUSPENSION

William J. Sutton, Jr., Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,847
Int. Cl. G03b 27/20
U.S. Cl. 355—87 11 Claims



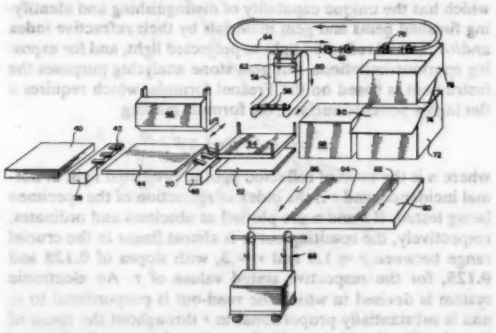
Apparatus for step and repeat exposure of a photosensitive plate which eliminates the necessity of removing the exposure head from the plate during stepping and thereafter repositioning the head for the next exposure. The exposure head has a planar bearing surface for movement adjacent the photosensitive plate and a curved bearing surface for engagement with a complementarily curved bearing surface of the exposure head support. Both the planar and curved bearing surfaces are provided with gas films therebetween in order to practically eliminate friction and allowing omnidirectional movement of the exposure head relative to the support. The gas film provided at the planar bearing surface of the support head is used to maintain the support head out of contact with the photosensitive plate to thereby allow relative movement in either of two coordinate directions parallel with the plate. This construction permits the exposure head to accommodate variations in the thickness of the photosensitive plate during movement under the head.

3,751,164

AUTOMATED APPARATUS FOR PHOTOCOMPOSING

Wesley W. Miller, Wyncote; Gerold Litschi, Lansdale, and Warren A. Bixler, Warminster, all of Pa., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 830,972, June 6, 1969, Pat. No. 3,635,711. This application Apr. 12, 1971, Ser. No. 132,976
Int. Cl. G03b 27/30
U.S. Cl. 355—100 13 Claims



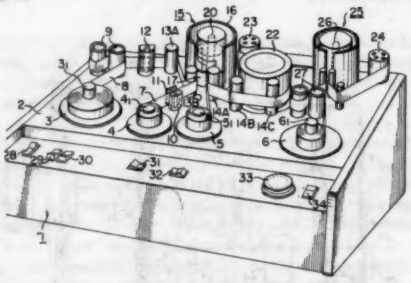
The disclosed invention is for an automated photocomposing apparatus. The apparatus includes (A) means for storing and supplying severed support sheets; (B) means for dispensing and leveling a liquid photocurable composition on a support sheet; (C) a housing having at one end an actinic light source and at the other end a support adapted to receive thereon a supported liquid photocurable composition which on exposure to actinic light through an image bearing transparency becomes selectively insolubilized in the exposed portions thereof; (D) a conveyor means for transferring photoexposed sheets from a horizontally disposed position to a vertically disposed position; (E) an etching bath energized by ultrasonic energy; (F) a washing bath; (G) an air drying station disposed adjacent the washing bath; and (H) a horizontally disposed photocuring station for finally curing the processed plate. A plurality of conveying means transfer sheets from location (A) to location (H) in automated sequence. The invention is especially useful in preparing a developable printing plate from a liquid photocurable composition.

3,751,165

PHOTOGRAPHIC CONTACT PRINTING DEVICE

Mutsuhiro Inoue, Sagamihara, and Yoichi Takahashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 7, 1971, Ser. No. 150,679
Claims priority, application Japan, June 12, 1970, 45/50855; June 25, 1970, 45/55793; July 24, 1970, 45/64861
Int. Cl. G03b 27/10
U.S. Cl. 355—108 11 Claims



An apparatus for duplicating an image-bearing original film onto an unsensitized copy film while continuously moving the two films. The apparatus includes main exposure device for projecting the images of the original film upon the copy film to thereby reproduce the images on the copy film, a feed mechanism for feeding the two films at the same speed into the main exposure device, detecting elements for detecting the density of the images of the original film, an auxiliary exposure device for providing a uniform exposure to the surface of the copy film, and control members associated with the detecting elements for controlling the auxiliary exposure provided by the auxiliary exposure device in accordance with the detection output of the detecting elements, whereby the copy film is subjected to a uniform auxiliary exposure in accordance with the image density of the original film, thereby forming latent copy images of a uniform density on the copy film irrespective of the image density of the original film.

3,751,166

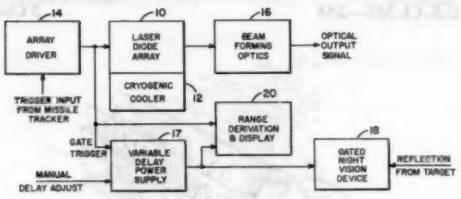
COMMAND GUIDANCE TRANSMITTER SYSTEM

George W. Starkey; Robert L. Sitton; Jimmy R. Duke, and Walter E. Miller, Jr., all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 3, 1971, Ser. No. 149,801
Int. Cl. G01c 3/08
U.S. Cl. 356—5 1 Claim

A command guidance, ranging, and night vision system is provided which utilizes a single optical source. A gallium arse-

nide laser diode array generates pulses of optical energy in response to high frequency modulation by a transistor driver. The laser array is cryogenically cooled allowing diode array operation at high average power and enhancing the output wavelength. An image intensifier tube with a gating power source therefor is synchronized with the array output pulse,



being gated on only when the reflected return signal is expected, sometime after the array output pulse is transmitted. The night vision intensifier tube is used in conjunction with the diode array by an operator to locate a target. When a target is located the gating capability of the night vision device is used to determine the range from the operator to the target.

3,751,167

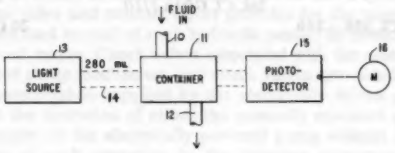
METHOD AND APPARATUS FOR CONTINUOUS MONITORING OF DISSOLVED ORGANICS

George Claus, 130 Sundance Road, Stamford, Conn.

Filed Feb. 23, 1971, Ser. No. 118,059

Int. Cl. G01n *21/26, 21/34*

U.S. Cl. 356—51 **16 Claims**



The amount of dissolved organic material in a solvent medium is measured by passing light radiation of 280 millimicron wavelength through the medium. The amino acid Tyrosine within the medium absorbs radiation of this wavelength. By measuring the absorbence of the radiation, the concentration of Tyrosine is determined and the amount of organic material can be calculated by the known proportional relationship of Tyrosine to total organic matter.

3,751,168

INDICATING APPARATUS FOR THE VARYING CONCENTRATION OF A SOLUTION

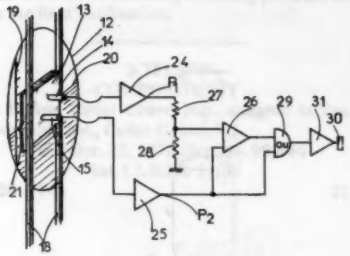
Helenio Llop, Creteil, and Pierre Lefort, Fontenay-sous-Bois, both of France, assignors to Societe D'Optique Precision, Electronique et Mecanique-Sopelem, Paris, France

Filed May 11, 1971, Ser. No. 142,276

Int. Cl. G01n *21/46*; G05b *1/00*

U.S. Cl. 356—135 **1 Claim**

There is described an apparatus for producing an electrical signal related to the varying concentration of a solution, for example a sugar solution. Light is inclinedly directed upon a surface of a prism which is in contact with the solution, so that light falling on one side of a boundary line, the position of which is a function of the concentration of the solution, is transmitted into the solution while light falling on the other side of this boundary line is totally reflected. The reflected light is directed towards an assembly including two photocells which are spaced apart in the direction of movement of the boundary as the solution concentration varies. The outputs of the two photocells are combined in a difference amplifier to yield a signal denoting that the solution concentration has



reached a predetermined value dependent upon the position in said direction of movement to which the assembly is adjusted.

3,751,169

METHODS FOR DETERMINING THE POSITION OF A POINT IN SPACE RELATIVE TO A GEOMETRICAL LINE DEFINED BY AT LEAST TWO OF ITS POINTS AND INSTALLATION FOR PERFORMING SAME

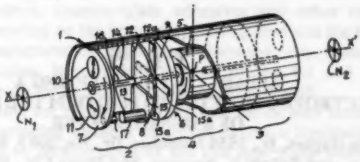
Andre Fornerod, Cully, Switzerland, assignor to Tamper Inc., West Columbia, S.C.

Filed Dec. 21, 1970, Ser. No. 99,987

Claims priority, application Switzerland, Dec. 26, 1969, 19203/69

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **3 Claims**



There is provided a method and an apparatus for levelling and aligning railroad track by determining the position of a point on the track to be corrected relative to a geometrical line defined by at least two other points located on either side of the normal dropped from the point to be corrected on to the geometrical line. Each of the points defining the geometrical line is represented by a light source illuminating the point to be corrected and angular measurement apparatus fixed at the point to be corrected, for measuring the angles formed between the axis of the measuring apparatus and the axis of each of the light beams from the light sources.

3,751,170

METHOD AND APPARATUS FOR POSITIONING BODIES RELATIVE TO EACH OTHER

Tsuneo Hidaka, Niiza, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 6, 1972, Ser. No. 232,054

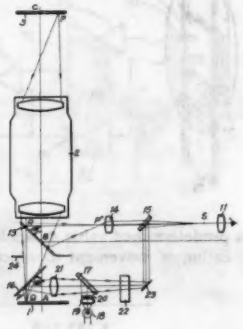
Claims priority, application Japan, Mar. 11, 1971, 46/12815

Int. Cl. G01b *11/26, 11/24*

U.S. Cl. 356—172 **12 Claims**

A method and apparatus for positioning with respect to each other a pair of bodies such as a mask having a predetermined pattern thereon and a wafer onto which the pattern is to be printed. These bodies are respectively situated in parallel focal planes and a reference point on the body in one focal

plane has an image thereof projected onto the body in the second focal plane, this latter body having a positioning point which is to coincide with this image when the bodies are properly positioned with respect to each other. A second image of the reference point is projected to an observation

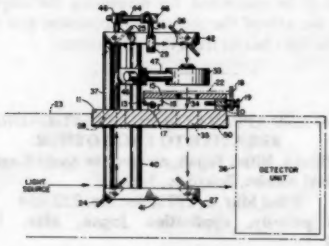


point, and an image of the image of the reference point on the body at the second focal plane is also projected to the observation point, so that the operator may observe at the observation point when the positioning point is located in coincidence with the image of the reference point on the body at the second focal plane.

3,751,171
APPARATUS FOR ADAPTING A SPECTROPHOTOMETER TO PERFORM THE FUNCTION OF A DENSITOMETER

Elvin Hughes, Jr., 3550 Nicholson Dr., No. 2083, Baton Rouge, La., and Robert V. Nauman, 864 Diron Cir., Baton Rouge, La.

Filed Jan. 5, 1971, Ser. No. 104,030
Int. Cl. G01n *21/16*
U.S. Cl. 356—244 **8 Claims**

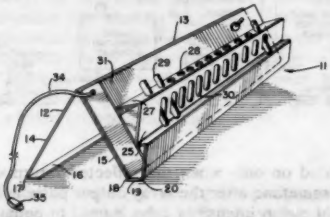


A lightweight, inexpensive device for adapting a spectrophotometer to perform the functions of a densitometer, including means for directing the light source from a spectrophotometer through a photographic plate, and means for moving the photographic plate across the beam of light.

3,751,172
VIEWING RACK

Lamont J. Seitz, and Eduardo V. Miranda, both of Huntington Beach, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Mar. 24, 1972, Ser. No. 237,824
Int. Cl. G01n *21/16*
U.S. Cl. 356—244 **3 Claims**

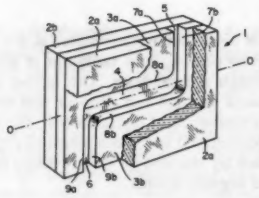


A rack constructed from a single blank is folded or bent into a shape to accommodate a plurality of test tubes. The rack may include an elongated light source to backlight a series of test tubes.

3,751,173
FLOWTHROUGH CUVETTE

Manuel C. Sanz, Grand Lancy, and Georges Revillet, Onex, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Aug. 24, 1972, Ser. No. 283,308
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **20 Claims**

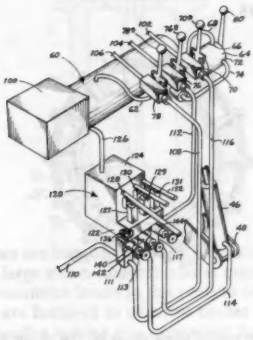


The invention relates to optical cuvettes of the throughflow type and to the production thereof. The cuvette comprises a stratified block composed of at least three layers which together define a space constituting a doubly-bent continuous passage with a central elongated cavity communicating with two transverse branch-channels extending to the cuvette surface. An intermediate layer consists of a pair of transparent plates having oppositely arranged inner edges which are shaped in accordance with the path of said passage and are rounded off between the central cavity and the transverse channels, to provide streamline flow in the passage. Two lateral layers consist of plates which respectively close off the passage on either side thereof, between the shaped inner edges of said pair. The invention further provides a manufacturing method wherein two plate-edges are shaped in accordance with the profile of the doubly-bent passage and are oppositely arranged at a given distance to form an intermediate layer on to which two lateral plates are then mounted to close off the passage on either side thereof.

3,751,174
HYDRAULIC SYSTEM FOR PAVER

Jack D. Layton, Salem, Oreg., assignor to Layton Manufacturing Co., Salem, Oreg.

Filed Aug. 10, 1971, Ser. No. 170,550
Int. Cl. E01c 19/20
U.S. Cl. 404—108 8 Claims

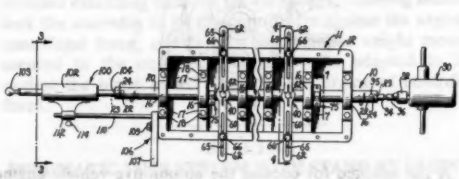


A paver having hitch arms adapted to be brought together to couple it to a towing vehicle, a gate raisable to open up discharge from the paver, and a lift actuatable to lift a screed in the paver from the ground. A hydraulic motor is provided for actuating each of the above under power. Manually operated pump mechanism drawing fluid from a reservoir is actuatable to supply fluid under pressure to each of said hydraulic motors. An electrically operated or driven pump having an intake connected to said reservoir and a system of selector valve and control valves provides for the supply of pressure fluid to each of such hydraulic motors by electrically energized means. Check valves associated with the manually operated pump mechanism, and check valves associated with the control valves supplied by the electrically driven pump permit the operation of either the manually operated pump mechanism or the electrically powered pump without interference of such operation by the pumping instrumentality which is inactive.

3,751,175
PORTABLE LINE BORING BAR ASSEMBLY

Daryl G. Brooks, Fresno, Calif., assignor to Porta-Tool Incorporated, Clovis, Calif.

Filed Nov. 5, 1970, Ser. No. 87,178
Int. Cl. B23b 41/12
U.S. Cl. 408—72 7 Claims

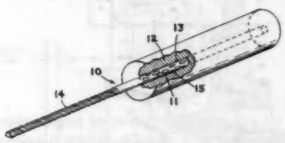


A portable line boring bar assembly for in-line boring the main bearing bores of an engine block for re-establishing their precise concentricity and axial alignment longitudinally of such a block providing an elongated boring bar for extension longitudinally through the bores of the block having centering means slidably mounted on the bar for temporary wedging engagement in selected bores of the block precisely to center the bar relative to the bores with bar support means releasably mounted on the block in spaced relation to the bores to hold the bar in said centered position during powered rotation and axial feeding movement of the bar in the block and including pre-set bore cutting means adapted to be releasably mounted in any desired location along the boring bar adjacent to said bores in the block. The assembly is readily portable and suitable for "in the field" utilization.

3,751,176
COMPOSITE BIT

John Von Hollen, Cedar Grove, N.J., assignor to Von Hollen Tool Company, Inc., Cedar Grove, N.J.

Filed Dec. 21, 1970, Ser. No. 99,844
Int. Cl. B23b 51/00
U.S. Cl. 408—144 11 Claims



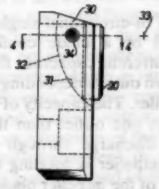
A composite bit or drill having a material working section adhesively connected to an enlarged gripping section. The material working section includes generally a cutting, grinding or finishing portion and continuous therewith a shank portion and is made of hard, abrasion resistant, heat resistant, durable alloys. The gripping section has a relatively large mass and large outer diameter with respect to the material working section and has an accurately formed longitudinal bore therein for receiving the shank of the material working section the adhesive connection between the material working section and the gripping section will not prevent heat transfer between these elements. Adhesive materials for connecting the cutting section to the gripping section may be anaerobic adhesives, epoxy adhesives, cyanoacrylate adhesives and other compounds depending on the bond strength required and the heat transfer characteristics established between the material working section, the gripping section of the bit and the chucking means for holding the composite bit or drill.

Additionally, for forming a composite bit or drill there is provided a gripping element or jacket having a longitudinal bore formed to receive drills or the like type tools within a predetermined range of sizes to permit the bit or drill to be fitted and adhesively connected in the bored jacket elements in any type of work shop where such tools are used.

3,751,177
GUIDE PAD MOUNTING ON A DRILL BIT

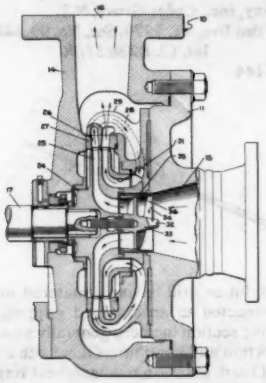
Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Nov. 20, 1970, Ser. No. 91,296
Claims priority, application Sweden, Nov. 24, 1969, 16082/69
Int. Cl. B23b 51/00
U.S. Cl. 408—200 7 Claims



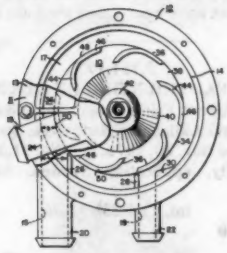
A drill has a guide pad pivotally mounted on it, on that the guide pad may adapt itself to the surface of a hole wherein the drill is being operated.

3,751,178
PUMP
James J. Paugh, Palmer, Mass., and Theodore J. Pollari, Brooklyn, Conn., assignors to Warren Pumps, Inc., Warren, Mass.
Filed Oct. 6, 1971, Ser. No. 186,909
Int. Cl. F01d 1/12
U.S. Cl. 415—56 3 Claims



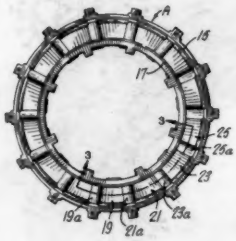
A centrifugal pump having a screw-type suction inducer located in the inlet passage and having a dual-stage pumping section.

3,751,179
BI-DIRECTIONAL CENTRIFUGAL PUMP
William A. Wassmann, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 26, 1971, Ser. No. 166,096
Int. Cl. F04d 29/22, 29/44
U.S. Cl. 415—152 A 4 Claims



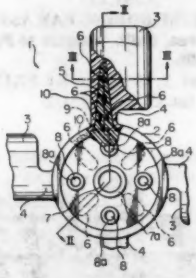
An impeller for a bi-directional single impeller centrifugal pump characterized by a blade configuration capable of pumping water at different capacities from a common pump cavity to either of two outlets depending upon the direction of rotation of the impeller. The capacity of the pump is generally much larger through one outlet than the other. In order to prevent unwanted discharge through the higher capacity opening when the impeller is rotating to pump through the other opening, each of the impeller blades includes a blocking segment at the discharge end of the blade which is defined by a circumferential extension of the blade having a center of curvature at essentially the axis of rotation of the impeller and extending for a distance from the blade discharge end.

3,751,180
VANE RINGS
James MacDonald Cameron, St. Lambert, Quebec, Canada, assignor to United Aircraft of Canada Limited, Longueuil, Quebec, Canada
Filed July 6, 1971, Ser. No. 159,879
Claims priority, application Great Britain, Dec. 8, 1970, 58,329/70
Int. Cl. F01d 9/02
U.S. Cl. 415—195 4 Claims



One piece cast metal vane rings of the same shroud diameter and number of vanes but of different throat areas are made using a pattern assembled from several pattern pieces in which the vanes have different angles to the axis of the vane ring shroud. A set of pattern pieces of two or three different angles can thus provide for a number of different throat areas, thus avoiding having to prepare, in a large number of different sizes, expensive molds for making pattern pieces for molds of the same diameter but differing throat areas.

3,751,181
FAN FOR COOLING AUTOMOTIVE VEHICLE ENGINE
Masaharu Hayashi, Ichinomiya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan
Filed Jan. 28, 1971, Ser. No. 110,553
Claims priority, application Japan, Jan. 31, 1970, 45/10347
Int. Cl. F01d 5/28
U.S. Cl. 416—132 3 Claims



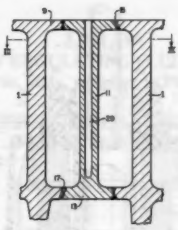
A fan adapted for cooling the automotive vehicle engines and formed of molded plastic material, comprising hub portion and blades securely attached thereto, said blades being formed of thermoplastic material whereas said hub portion being formed of relatively stiff fiber reinforced thermoset plastic material, arms extending from the hub portion into the corresponding blades to form insert members, said thermoplastic material of which the blades are formed extending from the hub portion to cover the arms extending from the hub portion, and holes formed in the arms and the hub portion to provide a firm bond for the thermoplastic material.

3,751,182

GUIDE VANES FOR SUPERSONIC TURBINE BLADES

Robert O. Brown, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,486
Int. Cl. F01d 5/22
U.S. Cl. 416—191 4 Claims



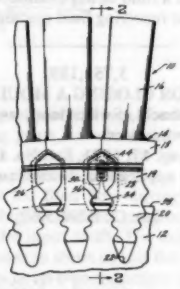
Guide vanes are installed between blades of the last stage of blading of a large steam turbine to form converging-diverging openings to minimize losses in this portion of the turbine. The guide vanes are fastened to adjacent blades through a shroud ring and through a lashing ring to connect the blades in such a manner as to reduce vibration and allow thermal expansion of the rotating blade assembly.

3,751,183

INTERBLADE BAFFLE AND DAMPER

Herbert E. Nichols, and Harvey W. Mason, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 2, 1971, Ser. No. 204,049
Int. Cl. F01d 5/10
U.S. Cl. 416—220 2 Claims



A baffle and damper assembly includes end plates for closing the opening between adjacent blade shanks, a connecting member extending between the end plates, retaining means to lock the assembly to its adjacent blades against the urging of centrifugal force, and at least one damper weight movably secured to the connecting member and adapted to bear against the blade platforms under the urging of centrifugal force.

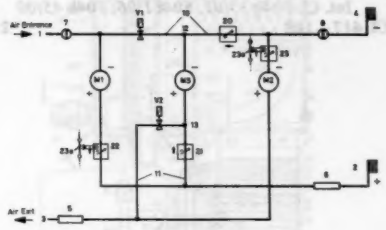
3,751,184

PNEUMATIC TUBE SYSTEM WITH STAND-BY BLOWER

Fritz Buchwald, and Dieter Pienkny, both of Berlin, Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,328
Claims priority, application Germany, Nov. 23, 1970, P 20 57 557.9
Int. Cl. F04b 41/06
U.S. Cl. 417—4 4 Claims

In a pneumatic tube system comprising one blower each for the vacuum intake air and the compressed air, a stand-by arrangement consisting of a stand-by blower, of two controlled valves and of four back-pressure valves is provided for increasing the operational reliability. Upon failure of one of the main blowers the supervisory elements associated with the



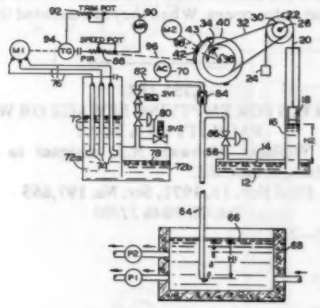
main blowers serve to switch on the stand-by blower as well as the respective controlled valve. The corresponding back-pressure valves are opened or closed automatically by the air stream as produced by the stand-by blower.

3,751,185

MANOMETER CONTROL

Mayo Gottliebson, and Charles Faes, both of Corvallis, Oreg., assignors to Flomatcher Co., Inc., Corvallis, Oreg.

Filed Oct. 4, 1971, Ser. No. 186,043
Int. Cl. F04b 41/06
U.S. Cl. 417—7 14 Claims



A liquid manometer control has a reservoir connected to a source of air pressure and to a bubbler tube, the lower end of which projects into the liquid within a wet well. A vented float tube extends upwardly from an open lower end within the reservoir and contains a float which moves upon fluctuations in liquid level within the float tube as determined by changes in the level of liquid in the wet well. A counterweighted chain connected to the float translates float movement via sprockets and chain to rotary motion of a cam wheel or drum having cam-type actuators on its periphery. These cams actuate switches or potentiometers which in turn provide pilot signals for starting and stopping pumps, controlling the speed of pumps, opening and closing valves and operating other devices as desired, as a function of the liquid level in the wet well. In an illustrated embodiment, the liquid level in the wet well determines the level of liquid in the float tube, which in turn controls the starting and stopping of a pair of pumps and the level of liquid in a liquid rheostat to determine the speed of one of such pumps. The pumps in turn control the level of liquid in the wet well.

3,751,186

HYDRAULIC SOLIDS CONVEYANCE

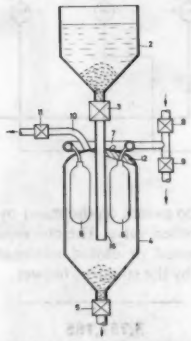
Basil Wayland Green, Johannesburg, Republic of South Africa, assignor to Edward L. Bateman Limited, Braamfontein, Transvaal, South Africa

Filed June 24, 1971, Ser. No. 156,429

Claims priority, application Republic of South Africa, June 25, 1970, 70/4372

Int. Cl. F04b *15/02*; F04f *1/06*; F04b *45/00*

U.S. Cl. 417—118 2 Claims



Mined ore is pumped by means of a pumping vessel fed from a settling tank. The latter discharges into the vessel through a central pipe going to the foot of the vessel. Around the pipe and above the lower end of the pipe there are a series of inflatable balloons. Pumping is effected by inflating the balloons. Oneway valves control the inlets and the outlets from the vessel. As the balloons are inflated the inlet valve closes and the outlet valve opens. When they are deflated the reverse happens.

3,751,187

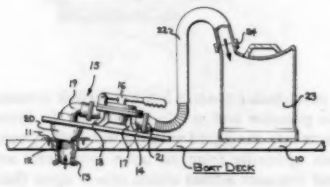
APPARATUS FOR EMPTYING SEWAGE OR WASTE FACILITY OF A BOAT

William D. Williams, Mahwah, N.J., assignor to Aquology Systems, Inc., Bristol, R.I.

Filed Nov. 11, 1971, Ser. No. 197,655

Int. Cl. F04b *21/00*

U.S. Cl. 417—234 1 Claim



Apparatus for emptying the sewage or waste facility of a boat which is equipped with a deck plate having a hole in communication with the boat's sewage collecting system. The apparatus includes a foot-receiving mounting platform on which is a manual pump provided with an inlet duct extending to the underside of the platform. A compressible elastomeric sealing annulus surrounds the inlet duct and can be compressed between the under side of the mounting platform and the deck plate by foot pressure to create an effective liquid-tight seal, such foot pressure also stabilizing the apparatus during pumping operation. The outlet of the pump is connected by a tube to a portable collecting tank.

3,751,188

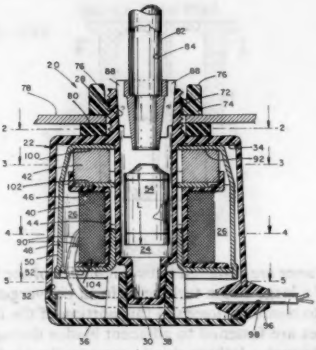
VALVELESS PUMP

Allan H. Willinger, 56 Gail Dr., New Rochelle, N.Y., and Melvin R. Kennedy, 1853 Diamondale Dr., Carson, Calif.

Filed Aug. 23, 1971, Ser. No. 173,784

Int. Cl. F04b *17/04*; F04f *7/00*

U.S. Cl. 417—240 12 Claims



A valveless pump comprising a housing, the latter including first and second chambers separated from one another. Each of the chambers has a closed end and an open end the latter being adjacent the closed end of the other. The second chamber is of annular extent and surrounds the first chamber. A magnetic assembly for generating a magnetic field extends in the second chamber, whereas a fluid ejecting magnetically-responsive hollow piston is freely disposed in the first chamber for axial displacement in the latter. A fluid inlet channel communicates with both first chamber and internally with the hollow piston, whereas a fluid outlet channel communicates with the first chamber for receiving fluid ejected by the piston.

3,751,189

DEVICE FOR CLOSING A MOULD CAVITY

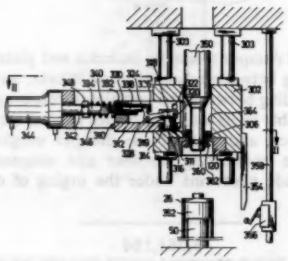
Karl Magerle, Kusnacht, Switzerland, assignor to Tubmatic Inter AG, Zug, Switzerland

Filed Aug. 17, 1971, Ser. No. 172,500

Claims priority, application Switzerland, Aug. 21, 1970, 12520

Int. Cl. B29h *5/02*

U.S. Cl. 425—258 21 Claims



A device for closing a mould cavity having an aperture leading into the hollow space of the cavity, said device comprising at least one mandrel which can be introduced into the hollow space of the cavity from the opposite side of the aperture, a slide allocated to the mould cavity and capable of being moved at right angles to the mandrel and which in one terminal position blocks off the aperture into the hollow space of the cavity, a punching die which passes through the aperture

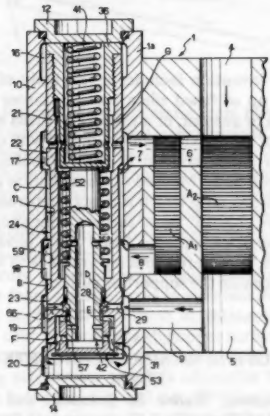
when the hollow space of the cavity is closed, said punching die being arranged on the side of the slide in relation to the mould cavity and movable both transversely and parallel in relation to the longitudinal axis of the mandrel.

3,751,190

SELF REGULATING FLUID PUMP

Carlo Cecchi, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Nov. 15, 1971, Ser. No. 198,909
Int. Cl. F04b *49/08*
U.S. Cl. 417—288 **1 Claim**



A fluid pressure pump of the type in which fluid is pumped by pairs of rotating gears, in which there are provided two pairs of gears and a control valve for by-passing one pair of gears if the delivery pressure of the pump exceeds a threshold value. This reduces the fluid flow through the pump and allows it to create a higher delivery pressure without requiring more power from the input shaft. The control valve is of the slide type and operates to short circuit the delivery side of one of the pairs of gears to its own induction side so that this pair of gears is inoperative when the valve is moved to its intervention position. The main slide of the valve has an auxiliary slide which enables the main slide to operate with a snap action to avoid hunting.

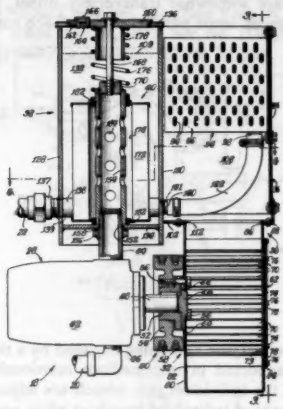
3,751,191

HYDRAULIC PUMP AND COOLER UNIT

Carl W. Mott, Jr., La Grange Park, and Tommy A. Middlesworth, Hinsdale, both of Ill., assignors to Mott Corporation, La Grange, Ill.

Filed Feb. 2, 1971, Ser. No. 111,954
Int. Cl. F04b *39/12*
U.S. Cl. 417—313 **12 Claims**

An arrangement of a hydraulic pump and cooler unit for a hydrostatic drive mechanism, the unit comprises pump means, blower means, duct means, and heat exchanger means. The pump means and blower means are mounted on a single shaft so that they are coaxial and have common drive means. The heat exchanger means is located within the duct means, and both of said means are located directly above the blower means. The unit may include a reservoir means arranged side-



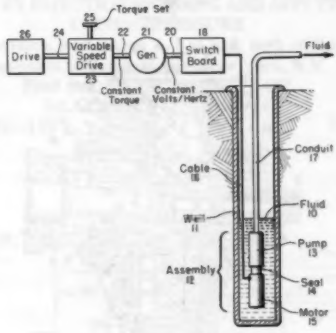
by-side with the duct means and above the pump means. Said reservoir means may also include filtering means therein.

3,751,192

SUBMERSIBLE PUMP DRIVE SYSTEM

Clinton A. Boyd, Tulsa, Okla., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 12, 1971, Ser. No. 132,942
Int. Cl. F04b *35/04*; H02p *7/00*
U.S. Cl. 417—411 **7 Claims**



A pump is coupled with a motor in a deep well to remove fluid of variable density. The downhole motor is energized from an electrical generator which produces substantially constant volts/hertz output energy. The generator has an input shaft to which a constant torque is applied from a variable drive unit. As the fluid becomes lighter, the downhole motor speeds up and the generator produces an increase in both frequency and voltage amplitude to maintain system efficiency.

3,751,193

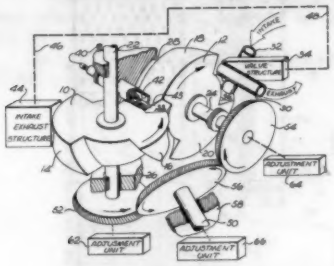
ROTARY ENGINE WITH INTERMESHED DISKS INCORPORATING ADJUSTABLE GEAR STRUCTURE

William B. McCall, 1447 E. Town & Country Ln., Phoenix, Ark.

Filed Sept. 1, 1971, Ser. No. 177,061
Int. Cl. F01c *1/08*; F04c *1/14, 17/04*
U.S. Cl. 418—107 **3 Claims**

A gearing system is disclosed for a rotary engine of the type in which a pair of intermeshed, segmented rotors are sup-

ported in perpendicular relationship to develop spaces of compression and expansion therebetween for operation as an engine, compressor or the like. The rotors are supported on shafts which are somewhat transversely offset, the axes of which lie in spaced apart parallel planes. Each rotor carries a



beveled gear wheel, the two being engaged by a third beveled gear wheel supported in intermediate relationship. As disclosed herein, the individual gear wheels are adjustable to accommodate wear of individual members while preserving the critical relationship required therebetween.

3,751,194

ROTARY DEVICES OPERATED BY PRESSURIZED-FLUID

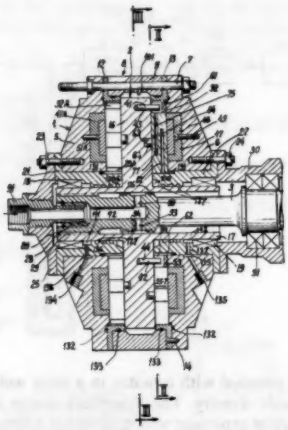
Jean Pierre Marcel, 20, rue E. Roux, Ruelle 16, France

Filed Jan. 11, 1972, Ser. No. 217,001

Claims priority, application France, Jan. 14, 1971, 7101087; Mar. 9, 1971, 7108052

Int. Cl. F01c *1/00*

U.S. Cl. 418—217 **7 Claims**



A rotary pressurized-fluid device usable as a pump, compressor or motor, comprises two coaxial units of revolution which can rotate one relative to the other around their common axis, one of these two units having at least one mobile piston in at least one cylinder formed from an annular groove of the other unit, coaxial with the latter, and divided into work-chambers by mobile partitions which slide in grooves, and which are subjected to the action of cams carried by the first unit, an inlet orifice and an outlet orifice for the fluid communicating respectively with two orifices located one on each side of said piston, the device including means suitable for effecting communication of the space contained between one face of a mobile partition and the wall of the cylinder with the space contained between one face of said partition opposed to the first-mentioned face, and of the same area, and a face of the groove, so that said opposed faces of each mobile partition are permanently subjected to the same pressure.

3,751,195

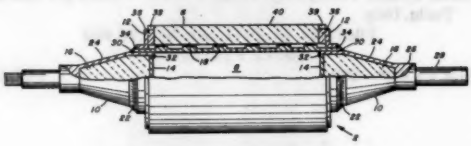
HEAT-TREATING-FURNACE ROLL AND METHOD OF HEAT-TREATING METAL STRIP THEREWITH

Roland B. Snow, Mount Lebanon Twsp., Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 113,183, Feb. 8, 1971, abandoned. This application Aug. 18, 1971, Ser. No. 172,947

Int. Cl. F26b *9/00*

U.S. Cl. 432—8 **12 Claims**



Roll of the invention includes a roll body of metal and a sleeve, made up of fused silica particles sinter bonded with colloidal silica or cement, or a mixture of fused silica particles and particles of other oxides sinter bonded with colloidal silica or cement, or sinter bonded fireclay granules, fixedly surrounding the roll body. Method of the invention consists of the steps of supporting strip which is being heat-treating at a temperature above 1000°F by a surface consisting of sintered fused silica particles, sintered fused silica mixed with other oxide particles, or sintered fireclay granules to inhibit formation of accretions on the supporting surface.

3,751,196

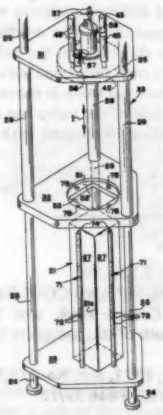
APPARATUS FOR MAKING A CONCRETE COLUMN FORM

David C. Cannon; Walter E. Johnson, and Richard W. Turnage, all of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Division of Ser. No. 727,967, May 9, 1968, abandoned. This application Dec. 9, 1970, Ser. No. 96,497

Int. Cl. B29d *27/04*

U.S. Cl. 425—4 **6 Claims**

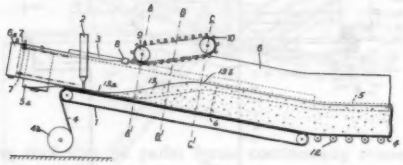


This invention relates to forms for molding concrete columns and more particularly to a method and apparatus for producing a form for pouring concrete columns of any desired cross-sectional shape.

3,751,197
APPARATUS FOR PRODUCTION OF POLYMERIC FOAM

Nicholas George Petzetaris, Athens, Greece, assignor to Hellenic Plastics and Rubber Industry N.M. Pelzetakis, S.A., Athens, Greece

Continuation-in-part of Ser. No. 867,218, Oct. 17, 1969, Pat. No. 3,719,734, which is a continuation-in-part of Ser. No. 738,962, June 21, 1968, abandoned, which is a continuation-in-part of Ser. No. 591,550, Nov. 2, 1966, abandoned. This application Jan. 26, 1971, Ser. No. 109,906
Int. Cl. B29d *27/04*
U.S. Cl. 425—4 22 Claims

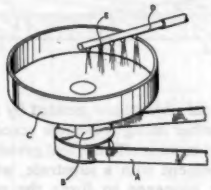


Apparatus for producing polymeric foam blocks (known as "buns") with a substantially flat upper surface. A mixture of, e.g. polyurethane, foam-forming reactants is moved along a trough-shaped conveyor where the reactants are confined during foaming by side and bottom surfaces moving with the expanding foam material. The side surfaces of the conveyor include thin flexible lining material which moves downstream with the expanding foam material and is simultaneously moved upwardly in the foaming region along with the rising surface of the foam material so as to maintain the side margins of the upper surface of the foam at substantially the same height as the central portion of the upper surface of the foam. The downstream and upward movement of the lining material is effected by mechanism which is adjustable to compensate for variations in the location and rate of expansion of the foam so as to ensure that the upper surface of the foam is maintained flat.

3,751,198
CAKE ICING MACHINE

Giovanni Tanara, Parma, Italy, assignor to Foodice Engineering Italiana S.p.A., Parma, Italy

Filed Oct. 1, 1970, Ser. No. 77,302
Int. Cl. A01j *21/00, 25/12;* A21c *9/04;* A23g *1/20;* A47j *43/20;* B28b *7/38;* B29c *1/00*
U.S. Cl. 425—100 33 Claims

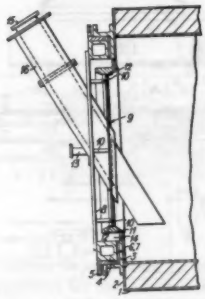


Machine for making cakes which comprises a base, a main plate mounted to rotate about a vertical axis with respect to said base, a plurality of molds, each mounted to rotate about an individual vertical axis carried by said main plate, said axes being equally spaced one from the other and located in a ring concentric with the axis of said main plate, means for imparting intermittent rotary motion to said main plate, means for rotating at least some of said molds about their individual axes during periods when said main plate is stationary, at least one supporting arm mounted on said base which supports a plurality of nozzles and which extends over the path travelled by said molds when said main plate is rotated, and means for introducing icing into said nozzles, during periods when the main plate is stationary.

3,751,199
PRESSURE KILN SEAL

Luke Alexander Toft, Swansea, Wales, assignor to The International Nichel Company, Inc., New York, N.Y.

Filed May 31, 1972, Ser. No. 258,397
Claims priority, application Great Britain, June 2, 1971, 18,662/71
Int. Cl. F27b *7/24*
U.S. Cl. 432—115 2 Claims

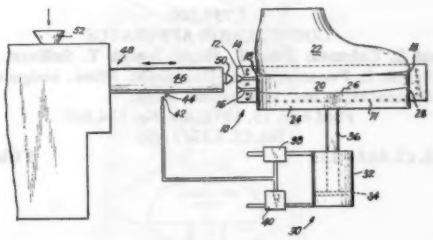


A rotary kiln having a metal-to-metal seal between its rotary and stationary parts is provided with means for preventing the outward passage of dust-laden gas from the kiln into the gap between the mating surfaces of the seal.

3,751,200
APPARATUS FOR MAKING A TWO COLOR RUBBER SALE BY INJECTION MOLDING AND APPLYING UNITING PRESSURE

John F. Borisuck, and Ruben A. LaChall, both of Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,457
Int. Cl. B29f *1/12;* B29h *3/14*
U.S. Cl. 425—119 7 Claims



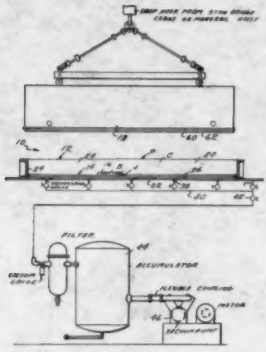
An article of footwear having a two-color rubber sole construction, and a method and apparatus for manufacturing the article. The sole construction includes a midsole-foxing component having foxing surrounding and engaging an outsole component which is vulcanized to the midsole-foxing component. The rubber used for the midsole-foxing component has a higher modulus than the rubber used for the outsole component. The higher modulus rubber is injected into a mold cavity having a colume considerably greater than the volume of the injected rubber, and a movable sole plate spreads the injected rubber against the underside of a lasted upper. The sole plate has a peripheral shoulder which determines the lower end and inner surface of the foxing. The lower modulus rubber is also injected into a mold cavity of considerably greater volume. The sole plate is again advanced toward the lasted upper to spread the outsole rubber against the midsole rubber to be vulcanized thereto.

3,751,201

APPARATUS FOR CASTING SLAB-FACED PANELS

Paul S. Kelsey, Delray Beach, Fla., assignor to The Susquehanna Corporation, Alexandria, Va.

Division of Ser. No. 49,152, June 23, 1970. This application May 18, 1972, Ser. No. 254,439
Int. Cl. B28b 3/10, 23/00
U.S. Cl. 425—123 10 Claims



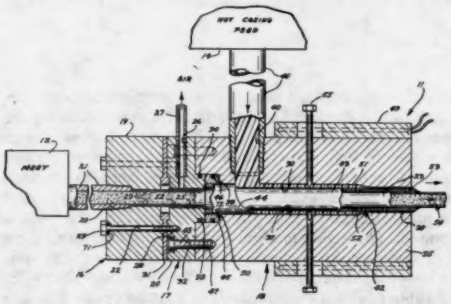
A casting box having at least one vacuum line connection through its floor is provided with a laminated insert plate which includes a resilient upper layer provided with one vacuum line opening for each slab, and which incorporates conduits extending from the openings to communication with the casting box floor. A placement grid having individual cells for receiving individual slabs is received in the casting box on the insert plate upper layer. After a slab has been placed in each cell a heavy seater is lowered onto the slabs to force them into sealing contact with the insert plate resilient upper layer and a vacuum is drawn through the casting box floor to hold the slabs so tightly against the insert plate resilient upper layer that the layer bulges up between adjacent slabs. The seater is removed; then the placement grid is withdrawn with the assistance of removable lateral shims and a settable composition such as concrete is poured into the casting box upon the slabs. The panels so formed have slabs set therein with simulated semi-flush concave joints. A modified device for production of panels faced with slabs on both sides is also disclosed.

3,751,202

COEXTRUSION APPARATUS

Paul E. Coleman; John T. Haub; Joseph T. Sullivan, and Dennis L. Pommer, all of Minneapolis, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Apr. 15, 1971, Ser. No. 134,165
Int. Cl. A22c 11/02
U.S. Cl. 425—133 9 Claims



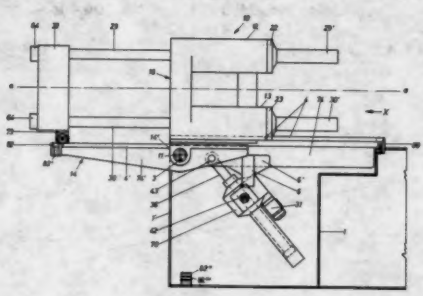
Method and apparatus is disclosed for coextruding a heat sensitive material such as meat and a hot plastic casing material such as of protein.

3,751,203

APPARATUS FOR INJECTION MOLDING

Karl Hehl, Siedlung 183, Lossburg/Wurttemberg, Germany

Filed June 25, 1971, Ser. No. 156,856
Claims priority, application Germany, July 2, 1970, P 20 32 789.3
Int. Cl. B29f 1/00
U.S. Cl. 425—190 20 Claims



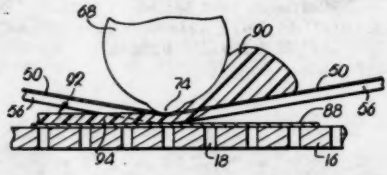
An injection molding apparatus including a clamping unit, a supporting frame and a driving device for pivoting the supporting frame and the clamping unit engaged therewith, wherein in one embodiment the supporting frame includes a clamping unit stabilizing arm and in another embodiment a part of the clamping unit is utilized as a stabilizing arm, and wherein in one embodiment the driving device is a hydraulic type actuator and in another embodiment the driving device is a manually actuatable spindle.

3,751,204

APPARATUS FOR SCREEN MOLDING THREE-DIMENSIONAL OBJECTS

Harold L. Baker, Kansas City, Mo., assignor to Rayette-Faberge Inc., New York, N.Y.

Division of Ser. No. 806,419, March 12, 1969, Pat. No. 3,658,977. This application Dec. 21, 1970, Ser. No. 100,292
Int. Cl. B29d 9/08
U.S. Cl. 425—127 1 Claim



Three-dimensional objects are molded by advancing a special squeegee member along a flexible screen or the like to which a perforated mold is affixed, and pressing the mold into progressive engagement with a substrate, while at the same time, causing the squeegee to force the molding material through the screen and into the mold cavity, the mold stripping automatically and cleanly from the deposited material behind the squeegee as it is advanced.

3,751,205

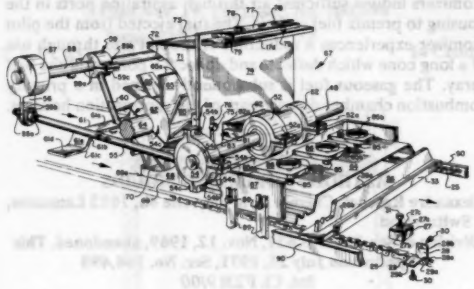
APPARATUS FOR FORMING AND HANDLING ROOF TILES

Dan H. Patten, Jr., 4020 E. Washington St., Phoenix, Ariz.

Filed Apr. 20, 1972, Ser. No. 245,794
Int. Cl. B28b 13/00
U.S. Cl. 425—253 4 Claims

An automated machine for fabricating roof tiles and the like from a mortar of cement type constituent materials. The

fabricating machine is composed of a number of individual mechanical components that perform steps in forming and



finishing roof tiles on pallet forms continuously conveyed through the machine.

ERRATUM

For Class 425—258 see:
Patent No. 3,751,189

3,751,206

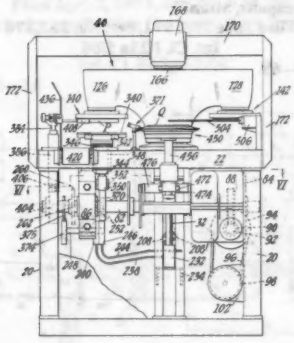
MACHINES FOR USE IN THE MANUFACTURE OF POTTERY WARE

Arthur Bradshaw; Frank W. Meadows, and Harold Peake, all of Stoke-on-Trent, England, assignors to Service (Engineers) Limited, Staffordshire, England

Continuation of Ser. No. 769,797, Oct. 23, 1968, abandoned. This application Mar. 10, 1971, Ser. No. 122,818

Int. Cl. B28b 5/08

U.S. Cl. 425—264 **3 Claims**



The invention relates to machines for making articles of ceramic ware, e.g., flatware of china, porcelain or earthenware, from moist clay comprising automatic means for cutting a piece from an extruded column of clay, pressing the piece so that its thickness is reduced by at least one third, transferring the piece to a rotatable mould so that it covers a central portion thereof, and, while rotating the mould, further reducing the thickness of the piece and spreading it over the remaining mould surface by means of a rotating roller shaping tool.

3,751,207

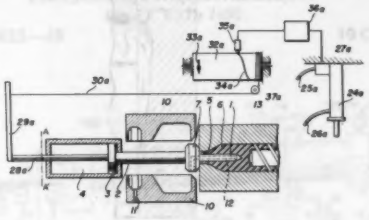
APPARATUS FOR BLOW MOLDING

Johannes Mehnert, Mendenuber Sieburg, Germany, assignor to Siemag Siegener Maschinenbau Gesellschaft mit beschranker Haftung, Bundesrepublik, Germany

Continuation-in-part of Ser. No. 862,796, Oct. 1, 1969, abandoned. This application Mar. 10, 1972, Ser. No. 233,437

Int. Cl. B29d 23/03

U.S. Cl. 425—326 **15 Claims**



This invention relates to apparatus for molding and, more particularly, to apparatus for the fabrication of hollow bodies from thermo-plastic material wherein, during a first fabrication step, the piece is pre-fabricated and, in a second step, the piece is positioned within a mold to form the hollow body by blowing until the hollow body reaches the desired shape.

3,751,208

VACUUM FORMING MACHINE

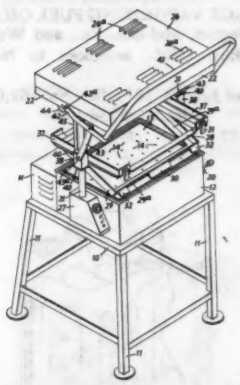
Paul Steabben Hepworth, Leicester, England, assignor to H. Upchurch & Co., Limited, Leicester, England

Filed June 21, 1971, Ser. No. 154,886

Claims priority, application Great Britain, June 20, 1970, 30,051/70

Int. Cl. B29c 17/04

U.S. Cl. 425—388 **6 Claims**



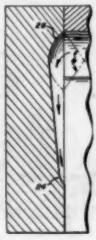
A machine for vacuum forming plastics sheets has a perforated mould platform above a vacuum reservoir. A valve is operable to place the holes in the platform in communication with the reservoir. Heating means are located above the platform. A carrier frame is movable up and down between the heating means and the mould platform. This frame carries at its underside a clamping frame to receive a plastics sheet. The clamping frame, which is at least partially separable from the carrier frame, is clampable to the latter by adjustable toggle clamps. The carrier frame is movable by a handle first upwards to present a sheet to the heating means and then downwards to clamp the clamping frame in an airtight manner upon the platform with the softened sheet drawn in an airtight manner over a mould.

3,751,209

EXTRUSION DIE WITH CHANNELED DIE ENDPLATES

Anthony J. Schreiber, Philadelphia, Pa., assignor to Standard Oil Company, Chicago, Ill.

Filed Apr. 2, 1971, Ser. No. 130,634
Int. Cl. B29d 7/04
U.S. Cl. 425—461 **4 Claims**



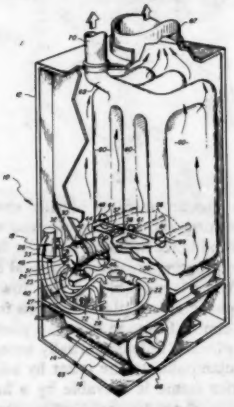
A flat film extrusion die comprising: a body having (1) means defining an inlet recess; (2) a longitudinally extending passageway communicating with said recess; (3) an extrusion manifold in flow communication with said inlet passageway extending substantially the entire width of the die; and (4) opposed wall portions in flow communication with said manifold which form an extrusion passageway leading from said manifold; a set of lips forming an elongated extrusion orifice extending substantially the entire width of the die with said set of lips in communication with said extrusion passageway; two channeled die endplates, one attached to each end of said body encapsulating said manifold, extrusion passageway and die lips, each channeled die endplate comprising a base plate having a principal cavity and a channel leading therefrom, said principal cavity being aligned with the respective ends of the manifold and said channel being aligned with the respective ends of said extrusion passageway.

3,751,210

TWO-STAGE VAPORIZING FUEL OIL BURNER

Robert S. Babington, McLean, Va., and Wallace W. Velie, Woodland Hills, Calif., assignors to North American Rockwell

Filed July 13, 1971, Ser. No. 162,075
Int. Cl. F23d 1/44
U.S. Cl. 431—237 **14 Claims**



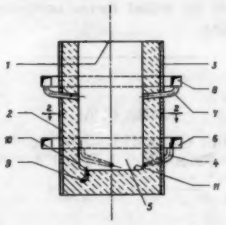
The device achieves vaporization of liquid fuel such as fuel oil in the "free stream" by burning a small percentage of the fuel on the fringes of a spray of atomized droplets. A small pilot flame is maintained within a housing and is supplied by one of a pair of atomizers to vaporize fuel being injected into the same housing from the second atomizer. The heated chamber within the housing thus vaporizes all of the fuel. Both atomizers induce sufficient air through aspiration ports in the housing to premix fuel and air. The fuel ejected from the pilot atomizer experiences a reduction of droplet size through use of a long cone which deflects and collects a portion of the fuel spray. The gaseous fuel is subsequently burned in a primary combustion chamber downstream of the vaporization housing.

3,751,211

METHOD FOR BURNING LIQUIDS

Alexandre Rasconi, Chemin de la Fauvette 4b, 1012 Lausanne, Switzerland

Division of Ser. No. 875,631, Nov. 12, 1969, abandoned. This application July 21, 1971, Ser. No. 164,498
Int. Cl. F23l 9/00
U.S. Cl. 431—9 **1 Claim**



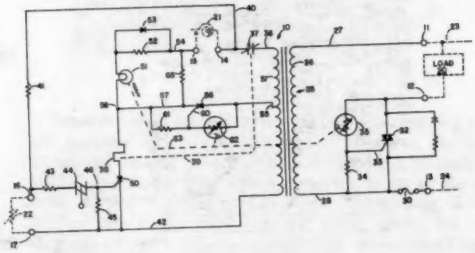
Liquid fuels such as hydrocarbon fuels are burned in an upright cylindrical chamber by introducing the liquid in a continuous stream into a peripheral zone at the bottom of the chamber, and simultaneously introducing air in a direction downwardly inclined and inclined away from the center of the chamber so as to create a vortex motion of the air in the chamber thereby to atomize the fuel.

3,751,212

FUEL BURNER CONTROL SYSTEM

Roland L. Hron, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 29, 1972, Ser. No. 267,270
Int. Cl. F23n 5/08
U.S. Cl. 431—69 **10 Claims**



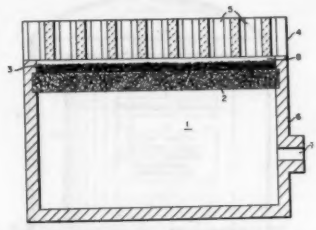
An all solid state control system which is adapted to be connected to a fuel burner is disclosed that uses a pair of solid state switches each having a radiation responsive gating means that is responsive to a single radiation generator means. The first solid state switching means is gated "on" to energize the fuel burner or load, while the second radiation responsive gating means is gated "on" to continuously energize the radiation generator means to act as a latching mechanism to hold the system energized. The radiation generator means is initially energized through a flame responsive circuit and thermostat to initiate operation of the system.

3,751,213

HIGH INTENSITY RADIANT GAS BURNER

Donald Maurice Sowards, Ashbourne Hills, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1971, Ser. No. 200,498
Int. Cl. F23d *13/12*
U.S. Cl. 432—328 14 Claims



A radiant heat gas burner comprising a radiant element formed of a refractory ceramic honeycomb, and a porous gas injection block formed of refractory fibers can be operated at high turn-down ratios and at high temperatures. Still higher operating temperatures can be reached when the combustion chamber is either completely or partially filled by refractory fibers.

ERRATA

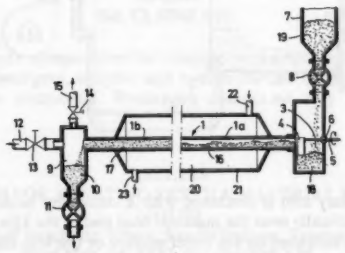
For Classes 432—8 and 432—115 see:
Patents Nos. 3,751,195 and 3,751,199

3,751,214

METHOD OF AND APPARATUS FOR CONVEYING GRANULAR MASSES IN TUBULAR TREATING CHAMBERS

Werner Wenzel; Friedrich H. Franke, and Mohammed Meraikib, all of Aachen, Germany, assignors to Rheinische Braunkohlenwerke AG, Cologne and Werner Wenzel, Aachen, both of Germany

Filed Apr. 2, 1971, Ser. No. 130,701
Claims priority, application Germany, Apr. 2, 1970, P 20 15 791.9
Int. Cl. B65g *53/04*
U.S. Cl. 432—15 14 Claims



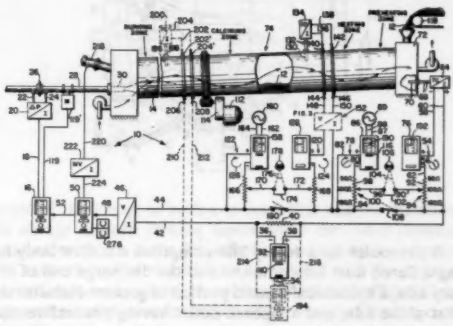
Solid fuel, such as granular raw brown coal, is moved through an approximately horizontally disposed tubular heat treating chamber (reaction tube) by means of a carrier fluid, the flow of which is periodically interrupted or at least decreased by periodically closing a fluid discharge valve disposed downstream of the reaction tube. During the closed periods of the valve, at least one part of the granular material settles in the tube and, when the valve is opened, the matrial is rendered turbulent by the initial thrust of the carrier fluid as the latter resumes its periodic effective flow.

3,751,215

DEVIATION PROPORTIONAL ANALOG PULSE CONTROLLING APPARATUS

Ernest Hucke, Glenside, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 12, 1972, Ser. No. 262,017
Int. Cl. F27b *7/00*
U.S. Cl. 432—49 10 Claims



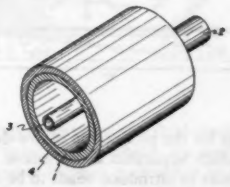
An automatic timer actuator relay is operably connected to continuously and alternately hold a switch of a transmitting controller in an automatic memory output signal tracking position only for a brief period of time and to hold the switch in a manual memory signal retention position for a much longer period of time so that the output deviation proportional error signal (P.V.-S.P.) that this controller is transmitting to a master cascade controller as a set point input signal can only occur over extremely short and widely spaced intervals of time during which a process is being controlled.

3,751,216

FUSER ROLL ASSEMBLY

Paul M. Gregory, Cheltenham, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 26, 1971, Ser. No. 202,495
Int. Cl. G03g *5/00*
U.S. Cl. 432—62 4 Claims

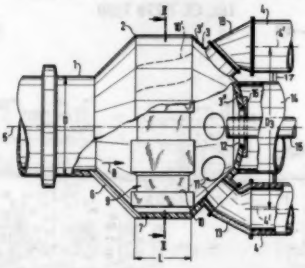


A fuser roll assembly for use in a xerographic copying machine including a cylindrical roll formed of aluminum and having an electric heating element disposed along its longitudinal axis. A substantially cylindrical shell, formed of stainless steel, is slidably mounted about the roll when the heating element is deenergized; energization of the heating element causing said roll to diametrally expand so the outer surface of the roll firmly engages the inner surface of the shell.

3,751,217
ROTARY KILN PRECOOLER CONSTRUCTION

Werner Schossler, 473 Ahlen, and Otto Heinemann, 4722 Ennigerloh, both of Germany, assignors to Polysius AG, Graf-Galen-Strasse, Germany

Filed Feb. 3, 1972, Ser. No. 223,150
Claims priority, application Germany, Feb. 25, 1971, P 21 09 065.3
Int. Cl. F27b 7/38
U.S. Cl. 432—80 11 Claims

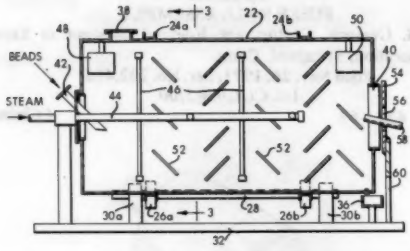


A precooler for a rotary kiln comprises a hollow body having a flared inlet for connection to the discharge end of a rotary kiln, a cylindrical central portion of greater diameter than that of the kiln, and a tapered outlet having circumferentially spaced cooling tubes arranged on a circle having a diameter less than that of the central portion. The central portion preferably includes a liner having grooves extending between the inlet and the outlet.

3,751,218
APPARATUS FOR EXPANDING RESIN

Edward L. Cherenson, Waltham, Mass., assignor to Artisan Industries Inc., Waltham, Mass.

Filed Aug. 27, 1971, Ser. No. 175,548
Int. Cl. F27b 15/00; F26g 11/02
U.S. Cl. 432—134 25 Claims

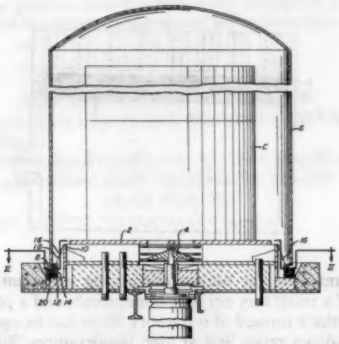


An apparatus for the production of low-density expandable resin beads, which apparatus comprises: a vessel to contain the beads; an inlet to introduce beads to be expanded into the interior of the vessel; an outlet to discharge from the vessel the beads after expansion to the desired density; means to rotate the vessel and to move the beads in a path from the inlet to the outlet of the vessel; and means to heat the beads while in the vessel from one state to another desired expanded state. Baffles are spaced apart from the interior wall of the vessel, and the baffles which are in the path of the beads are adapted to control the residence time of the beads as they move from the inlet to the outlet end of the vessel, and to maintain the beads as they move from the inlet to the outlet in a substantially uniform condition of expansion.

3,751,219
ANNEALING FURNACE SEAL

Fred L. Kitchel, Valparaiso, Ind., assignor to United States Steel Corporation

Filed Oct. 28, 1971, Ser. No. 193,348
Int. Cl. F26b 25/00; F26d 23/00; C21d 1/12
U.S. Cl. 432—257 15 Claims

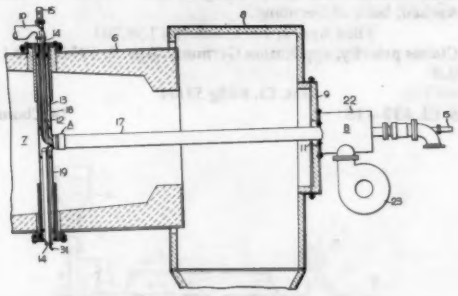


A seal for eliminating or reducing air infiltration into an inner cover of a steel annealing furnace includes a tube of stainless steel mesh filled with a woven ceramic blanket, preferably arranged in a roll. The bottom of the inner cover rests on the tube.

3,751,220
FLUID DELIVERY SYSTEM FOR ROTARY KILN

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 24, 1972, Ser. No. 309,529
Int. Cl. F27b 7/36
U.S. Cl. 432—115 5 Claims

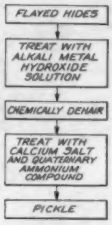


A rotary kiln is disclosed with a stationary hood mounted concentrically over the material feed end of the kiln. Fuel nozzles are mounted on the outer surface of the kiln shell and are connected to a manifold also mounted on the outer surface of the kiln shell. A fuel delivery tube connected to the manifold projects radially inwardly to the interior of the kiln and then axially outwardly through the hood to the exterior of the kiln for connection to the fuel supply. A cooling air pipe surrounds the portion of the fuel tube located in the interior of the kiln. Air is forced through the pipe to cool the fuel. A flexible ball joint is provided in the cooling pipe to compensate for any misalignment between the rotating axis of the kiln and the stationary axis of the hood.

3,751,221
CURING AND PRETANNAGE OF HIDES

Don S. Elvrum, 6233 Saylin Ln., Los Angeles, Calif.

Division of Ser. No. 654,432, July 19, 1967, Pat. No. 3,574,517. This application July 2, 1970, Ser. No. 51,982
Int. Cl. C14c *1/06, 1/08, 1/02*
U.S. Cl. 8—94.16 8 Claims



Hides may be cured and pretanned by: treating raw hides with a sodium hydroxide solution so as to react the lipid material in order to cause formation of soaps, limited attack on protein material present in the hides, and swelling of the collagen in the hides; adding sodium chloride to the sodium hydroxide solution in order to enable this salt to be taken up from the solution by the hides, causing an increase in the strength of the swollen collagen; dehairing the hides; treating the hides with sodium sulphite solution so as to add strength to the swollen collagen; treating the hides with a mixture of quaternary ammonium salt, and a calcium salt in order to precipitate any soaps present and to place the ammonium salt within the remaining hide material and to separate facia tissue from the remaining hide material; and pickling the hides with an acid solution so as to effect a size reduction and strengthening of the swollen collagen. If desired, the hides may be bated prior to being pickled. The so-cured hides have properties which are related to the properties of the ammonium salt. The resulting hides can be further treated in accordance with conventional tanning practices.

3,751,222
PROCESS OF CLEANING CLOTH

Michel Rene Roger Gobert, Courbevoie, France, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 817,197, April 17, 1969, abandoned, and a continuation of Ser. No. 6,942, Jan. 29, 1970, abandoned. This application Dec. 13, 1971, Ser. No. 207,684
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 12 Claims

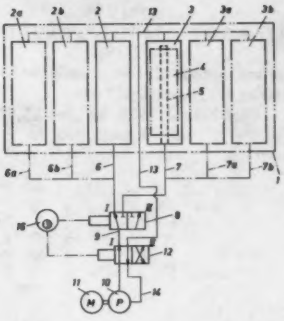
Detergent composition for soaking or washing containing organic detergent, enzyme and hydroxylamine compound or hydrazine compound. Peroxygen compound may also be present.

3,751,223
METHOD FOR TREATING TEXTILE MATERIAL WITH A LIQUID

Niels Rudolf Bergholtz, Kinna, Sandfallsstigen, Sweden

Filed Mar. 24, 1972, Ser. No. 237,678
Claims priority, application Sweden, Mar. 24, 1971, 3797/71
Int. Cl. B05c *8/02*
U.S. Cl. 8—155.1 6 Claims

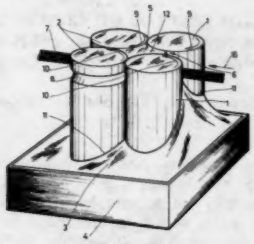
In dyeing processes the velocity of the dyeing liquid when passing through the material to be treated is important. The forcing of the liquid through the material imposes a heavy load upon the pump, and it has been found, that a more uniform dyeing is obtained with less expenditure of power if the dyeing apparatus is provided with at least two compartments into which the bulk of material to be treated may be placed in two smaller batches. The two compartments are alternatingly connected to the pump, in such a manner that one compartment will always contain flowing liquid while the other contains liquid at rest. The term for switching over may be selected with respect to the material to be treated and the type of dyestuff, but each period of activity should be sufficient long to permit a complete substitution of the liquid within the compartment.



3,751,224
METHOD AND APPARATUS FOR A CONTINUOUS FLUID TREATMENT OF FIBROUS MATERIALS

Peter Martin Wackerle, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Germany

Filed Dec. 20, 1971, Ser. No. 210,031
Claims priority, application Germany, Dec. 23, 1970, P 20 63 374.3
Int. Cl. B05c *3/04, 3/132*
U.S. Cl. 8—151 23 Claims



In treating fibrous materials with a fluid medium, such as for cleaning or impregnating the fibers, the material is moved along a path of travel through a chamber in which the fluid medium flows under pressure in a vortical pattern. Due to the vortical flow, the fluid medium flows in counterflow relationship to the fibrous material for at least a part of its path of travel through the chamber. Further, at the same time it passes in counterflow relationship, the fluid medium also flows transversely into the fibrous material. The chamber can be defined laterally by two pairs of vertically extending rotating rolls. The rolls in one pair are spaced apart and form an inlet gap

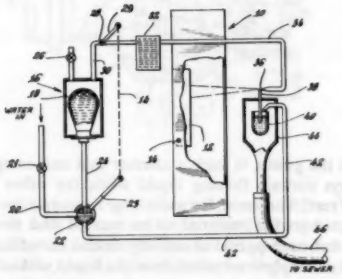
through which the fibrous material passes into the chamber, while at least one of the rolls in the other pair has a circumferentially extending groove through which the mateial exits from the chamber. The rolls in each pair rotate in opposite directions to one another in developing the vortical flow of the fluid medium.

3,751,225

STERILIZING WITH LIQUID SPRAY CONTAINING OZONE

Eskil L. Karlson, Stamford, Conn., assignor to Pollution Control Industries Inc., Stamford, Conn.

Filed Mar. 2, 1970, Ser. No. 15,551
Int. Cl. A61l *3/00*
U.S. Cl. 21—91 **1 Claim**



Ozone carrying mist is employed to sterilize the interior of an enclosure including surfaces and objects therein. Closing movement of a movable wall portion of the enclosure actuates timing means and provides substantially simultaneous flows of predetermined amounts of ozone and water which are mixed to form a mist and injected into the enclosure. Electrical circuitry controlled by the timing means then actuates means for exhausting ozone from the enclosure and drying the wetted surfaces therein.

3,751,226

BACKFLOW TEST FOR OIL CONCENTRATION

Robert J. Hesse, North Olmsted, Ohio, and Robert F. Farmer, Baltimore, Md., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1971, Ser. No. 188,446
Int. Cl. G01n *33/24*
U.S. Cl. 23—230 EP **5 Claims**

The concentration of oil phase fluid in subterranean reservoir is measured by injecting slugs of aqueous liquid containing a preferentially water soluble tracer (i.e., distinctive material) that reacts within the reservoir to form a tracer material that is relatively oil soluble and is partitioned between the oil and water phase fluids.

3,751,227

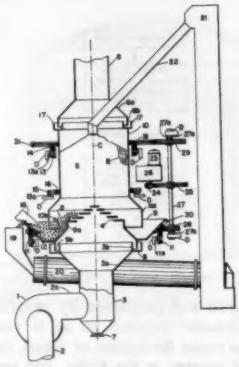
REACTIVE WASTE GAS TREATING DEVICE

Philip W. Robinson, 7831 Seventh St., Downey, Calif.

Filed Nov. 4, 1971, Ser. No. 195,733
Int. Cl. B01j *9/10, 1/22*
U.S. Cl. 23—260 **11 Claims**

A waste gas treating device in which a bed of relatively large size particled material which is chemically reactive to at least a portion of the components in the gas is subjected to movement as a stream of waste gas that is to be treated flows therethrough. The particled material is so chosen that it may be disposed to define a porous bed through which the waste gas flows to form layers of nonvolatile salts on the exterior surfaces of the particled material.

An ideal particled material for this purpose is crushed limestone that is but slightly soluble in water, but which reacts with waste gases containing certain acids and acid-forming components such as the various oxides of sulfur and nitrogen to form salts thereon. The movement of the particled material in the bed is such that it is constantly recycled, and during the recycling operation may, if desired, be subjected to washing to



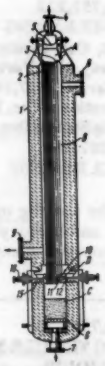
remove films of salts therefrom. The constant movement of the particles of the material relative to one another also tends to remove the films of formed salts on the exterior surface thereof by abrasive action. Thus, the particles due to the washing and abrasive action has fresh surfaces exposed to the reactive waste gases, and optimum removal of the reactive components from the waste gas is achieved.

3,751,228

APPARATUS FOR REFORMING HYDROCARBONS UNDER PRESSURE

Vladimir Petrovich Semenov, Vodkovsky pereulok, 4/6, kv. 69, Moscow, U.S.S.R.

Filed Dec. 16, 1970, Ser. No. 98,546
Int. Cl. B01j *9/04*
U.S. Cl. 23—289 **1 Claim**



An apparatus for reforming hydrocarbons under pressure comprising a heat-exchange chamber incorporating reaction tubes for effecting a process of primary reforming and a shaft chamber for effecting a process of secondary reforming located at the open ends of the reaction tubes. The heat-exchange chamber is separated from the shaft chamber by a double transverse partition having walls forming an intermiate chamber for supplying gaseous reagents. This intermediate chamber is completely isolated from the heat-exchange chamber and is in communication with the shaft chamber.

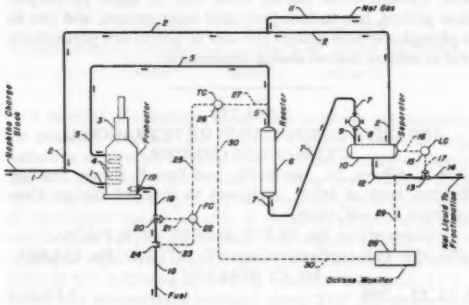
3,751,229
CONTROL OF REACTION ZONE SEVERITY BY RESPONSE TO OCTANE NUMBER OF EFFLUENT LIQUID AT REACTION PRESSURE

Walter A. Bajek, Lombard, and James H. McLaughlin, La Grange, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 868,460, Oct. 22, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,801. The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.

Int. Cl. B01j *9/04*; C10g *35/04*; G01n *33/00*

U.S. Cl. 23—253 A 14 Claims



An improved control system for adjusting and controlling reaction zone severity in a continuous flow hydrocarbon conversion process, wherein a hydrocarbon charge stock is passed through a reaction zone at conversion conditions comprising elevated temperature and pressure, and the resulting product effluent is separated into a vapor phase and into a liquid phase comprising gasoline boiling range hydrocarbon constituents. A sample of liquid phase effluent is continuously passed without intervening depressurization into a hydrocarbon analyzer which adjusts the reaction severity, and preferably heat input to the reaction zone, in response to the octane number of the liquid phase of the effluent. The octane measurement is effected by an analyzer comprising a stabilized cool flame generator with a servo-positioned flame front which provides a real time output signal indicative of sample octane number.

3,751,230
EXHAUST GAS CONTROL IN FLAME IONIZATION DETECTORS

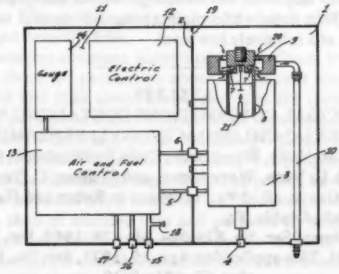
Kurt Hofmann, Hergershausen, Germany, assignor to Hartmann & Braun, Messund Regeltechnik, Frankfurt, Germany

Filed Aug. 2, 1971, Ser. No. 167,998

Claims priority, application Germany, Aug. 6, 1970, G 70 29 598.6

Int. Cl. G01n *31/12*

U.S. Cl. 23—254 EF 4 Claims



Flame ionization detector having a burner inside of a tube, the tube having cover means provided for connection to an exhaust pipe and establishing a collecting chamber for exhaust gases of the burner into which scavenging air is fed at a rate sufficient for diluting the exhaust gases to a significant extent, so that the dew point of the resulting mixture is reduced, and little or no condensation occurs along discharge path for the air exhaust gas mixture.

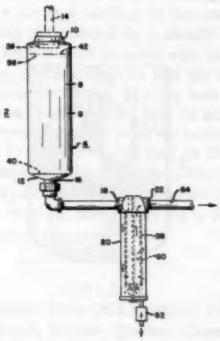
3,751,231
APPARATUS FOR USE IN TREATING FLUIDS

Albert Niedzielski, 802 Michigan Blvd., Erie, Pa.

Filed Jan. 21, 1971, Ser. No. 108,387

Int. Cl. B01j *1/08*

U.S. Cl. 23—260 1 Claim



Apparatus for supporting a bed of granular material through which fluid under pressure is continuously passed including an upright elongated vessel, means for diffusing incoming fluid to the vessel, a screen assembly for supporting the bed of granular material and a collecting chamber formed in the bottom of the vessel beneath the screen assembly.

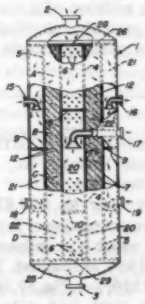
3,751,232
MEANS FOR EFFECTING A MULTIPLE STAGE CONTACT OF A REACTANT STREAM

Henry C. Borre, Mt. Prospect, Ill., and Wayne N. Root, Statesville, N.C., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 14, 1971, Ser. No. 106,512

Int. Cl. B01j *9/04*; C07c *15/10*

U.S. Cl. 23—288 R 1 Claim



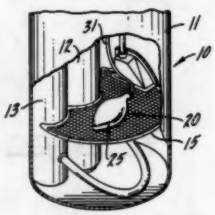
Method and apparatus for effecting a multiple stage contact to a reactant stream such as a multistage dehydrogenation of ethylbenzene to styrene. The reaction feed stream is passed alternately in outward and inward radial flow directions through a plurality of adjacent annular reaction zones and withdrawn

from intermediate reaction zones and channeled to mixing zones longitudinally adjacent the next successive annular reaction zones. A heat exchange medium is introduced into such mixing zones in a manner effecting both a downstream flow thereof to the next reaction zone and mixing with the reactant stream.

3,751,233
SALT INDICATOR IN A WATER CONDITIONING DEVICE

Edward J. Tischler, St. Paul, Minn., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Dec. 2, 1970, Ser. No. 94,467
Int. Cl. G08b *13/10*
U.S. Cl. 23—272 **10 Claims**



A regenerating mineral indicator including a detector mechanism to determine whether or not there is a predetermined quantity of mineral resting on a mineral support platform and signal means to warn the operator that either the mineral level is low or bridging has occured. The detector mechanism includes a gas inflated bladder supported on the platform and a conduit having one end in communication with the bladder and the other end in communication with signal means. Various signal means are disclosed which are actuated by the change in pressure in the bladder.

3,751,234
FUEL OIL SLUDGE DISPERSANT COMPOSITION

Alan Douglas Adams, Newark, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Feb. 2, 1971, Ser. No. 112,065
Int. Cl. C10l *1/22*
U.S. Cl. 44—66 **7 Claims**

Sludges which normally form in fuel oil are maintained in a suspended state by the addition of a sludge dispersant composition comprising a partially esterified polyethoxylated or propoxylated aniline-formaldehyde resin having low molecular weight.

3,751,235
GASOLINE COMPOSITION

Walter F. Schoen, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of Ser. No. 753,832, July 31, 1968, abandoned, which is a continuation of Ser. No. 528,777, Feb. 21, 1966, abandoned, which is a continuation-in-part of Ser. No. 413,303, Nov. 23, 1964, abandoned. This application May 21, 1970, Ser. No. 39,564
Int. Cl. C10l *1/18, 1/26, 1/30*
U.S. Cl. 44—58 **11 Claims**

Gasoline compositions containing an additive for reducing the amount of deposits formed in engine intake manifolds and on the intake valve tulips. The compositions contain the base gasoline and as an additive, a heavy distillate naphthenic oil, and, preferably, also a gasoline-soluble nickel, cobalt, chromium or zinc organophosphate.

3,751,236
SLUDGE DISPERSANT COMPOSITIONS

Alan D. Adams, Newark, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

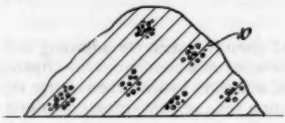
Filed June 10, 1971, Ser. No. 151,964
Int. Cl. C10l *1/26*
U.S. Cl. 44—66 **7 Claims**

Sludges and fine particulate matter which normally accumulate in petroleum distillate products are maintained in a suspended state by the addition of a dispersant which comprises an amine neutralized condensation product of a partial fatty acid-phosphoric acid ester of a polyoxyethylene or polyoxypropylene ether of a polyol having four to six carbon atoms. Compositions having from one to eight polyoxyalkylene groups, one to four fatty acid ester groups, and one to two phosphoric acid groups per mol of polyol are particularly useful as ashless fuel oil sludge dispersants.

3,751,237
ABRASIVE COMPOSITION OF TETRAGONAL GERMANIUM DIOXIDE

Walter A. Albers, Jr., Northville, and Don E. Swets, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 28,772, April 15, 1970, Pat. No. 3,696,357. This application June 17, 1971, Ser. No. 154,007
Int. Cl. B24d *3/02*
U.S. Cl. 51—309 **3 Claims**



The abrasive qualities of tetragonal germanium dioxide are described, along with compositions and articles made with a tetragonal germanium dioxide abrasive. Techniques for using tetragonal germanium dioxide as an abrasive are also described.

3,751,238
METHOD OF CHEMICALLY STRENGTHENING A SILICATE ARTICLE CONTAINING SODA

Peter Grego, and Robert G. Howell, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 25, 1970, Ser. No. 14,219
Int. Cl. C03c *15/00, 21/00;* B01d *59/40*
U.S. Cl. 65—30 **10 Claims**

This invention relates to the treatment of a silicate glass article to develop strengthening compressive stresses within a surface layer on the article by introducing potassium ions into the glass surface layer in exchange for sodium ions. It is more particularly concerned with an improved method of treatment to increase the depth of ion exchange within the glass surface within a given time while maintaining the central tension in the article at a relatively low level.

3,751,239
HERBICIDAL COMPOSITIONS CONTAINING N-(1,1-DIALKYL-3-CHLOROACETONYL) BENZAMIDES

Patrick J. McNulty, Wyndmoor; Colin Swithenbank, Perkasie; Kenneth L. Viste, Warminster, and William C. Von Meyer, Willow Grove, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 829,084, May 29, 1969, Pat. No. 3,661,991. This application Apr. 19, 1971, Ser. No. 135,388
Int. Cl. A01n *9/20*
U.S. Cl. 71—118 **9 Claims**

Biocidal compositions which contain as the active ingredient a compound belonging to the class of N-(1,1-dialkyl-

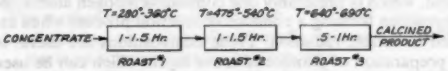
3-mono(di- and tri)-chloroacetonyl)-3-(or -3,4-, -3,5- or -3,4,5-) substituted benzamides and their use in controlling plant growth and phytopathogenic fungi.

3,751,240

METHOD OF ROASTING COPPER SULPHIDE CONCENTRATES AND ORES

George E. Green, Tucson, Ariz., assignor to Banner Mining Company, Tucson, Ariz.

Filed June 7, 1971, Ser. No. 150,664
Int. Cl. C22c *1/16, 15/08*
U.S. Cl. 75—1 **3 Claims**



A method of roasting copper-iron-sulphide ore concentrate or mixture, wherein the ratio of sulphur values to copper values is preferably at least one, to yield a calcined product, for the separation and recovery of copper values by acid leaching and electrolytic deposition, having at least 99 percent of its copper values soluble in dilute sulphuric acid and no more than 10 percent of the iron values soluble in dilute sulphuric acid. The method comprises oxidizing the concentrate in the following three step reaction sequence: 1) 1–1.5 hours at a temperature between about 280° and about 360°C; 2) 1–1.5 hours at a temperature between about 475° and about 540°C; and 3) 0.5–1.0 hour at a temperature between about 640° and about 690°C.

3,751,241

METHOD FOR PRODUCING WEATHER-RESISTANT SUPERFLUXED METALLIZED PELLETS FROM IRON-BEARING FINES AND A SUPERFLUXED METALLIZED PELLET PRODUCED THEREBY

James L. Sloughfy, and Lloyd V. Fegan, Jr., both of Allentown, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 28, 1970, Ser. No. 101,740
Int. Cl. C21b *1/08, 1/28, 3/04*
U.S. Cl. 75—3 **14 Claims**

A method for producing weather-resistant superfluxed metallized iron pellets from iron-bearing fines. A mix containing about 56 percent to about 85 percent iron-bearing fines, about twelve percent to about 40 percent flux material and about 3 percent to about 4 percent solid reductant is prepared. The mix is balled. A charge of balls, a flux and a solid reductant in a weight ratio of 100 pounds:5 pounds:100/200 pounds respectively is placed in one end of a rotary kiln. The charged materials are heated to about 1,900° F. for a time sufficient to calcine the flux materials and to reduce 90 percent of the iron to the ferrous state. The charged materials are further heated to a temperature range of about 2,000° F. to about 2,200° F. for a time sufficient to reduce about 80 percent to about 99 percent of the iron to the metallic state. The pellets are cooled to below 300° F. and discharged from the kiln.

The weather-resistant superfluxed metallized iron pellets contain about 40 percent to about 80 percent total iron, of which not less than about 80 percent is in the metallic state, about 12 percent to about 40 percent of calcium oxide and/or magnesium oxide, a slag phase containing 3 percent to 10 percent silica, about 0.5 percent to about 2.5 percent alumina, the remainder incidental impurities. The pellets have a base to acid ratio of about 2.5/1 to about 7/1. The pellets have an impervious shell of metallic iron and particles of calcium oxide and magnesium oxide surrounded by the metallic iron. The core of the pellets contains metallic iron, some iron oxide, calcio-magnesio wustite and a slag phase. The pellets are bonded by an interlocking of the metallic iron lattice, the slag phase and calcio-magnesio wustite. The calcium oxide and magnesium oxide are in a stable form.

3,751,242

PROCESS FOR MAKING CHRIMIUM ALLOYS

Knuppel Helmut, Sulzbach-Rosenberg; Karl Brotzmann, Sulbach-Rosenberg Hutte, and Hans Georg Fassbinder, Sulzbach-Rosenberg, all of Germany, assignors to Eisenwek-Gesellschaft Maximilian-shutte m.b.H., Sulzbach-Rosenberg Hutte, Germany

Filed Apr. 2, 1970, Ser. No. 25,267
Claims priority, application Germany, Apr. 2, 1969, P 19 16 945.0
Int. Cl. C21c *5/34*
U.S. Cl. 75—49 **4 Claims**

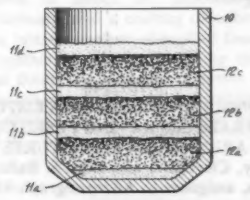
A process for making a chromium alloy containing from about 10 percent to about 30 percent chromium and the remainder essentially iron comprises refining a pig iron melt containing chromium in a converter by blowing oxygen jets into the melt under the melt surface in the converter, the oxygen jets each being surrounded by a sheath of a jacket gas such as propane which is slow to react with the melt in order to protect the lining of the converter and the nozzles through which the oxygen jets are blown. The pig iron itself may contain the chromium or the chromium may be added to the melt in the form of a chromium alloy after an initial refinement of the pig iron melt in the converter and in this case further refinement by the introduction of the jacketed oxygen jets into the melt takes place after the chromium has been added. After the oxygen blowing there may be a final blow using jets of argon in place of the oxygen.

3,751,243

PROCEDURE FOR QUENCHING DROSS

Melvin Elliott McLeod, Arvida, Quebec, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 8, 1971, Ser. No. 104,961
Int. Cl. C22b *7/00, 7/04, 21/00*
U.S. Cl. 75—63 **6 Claims**



For quenching dross skimmed from a molten aluminum surface, the dross is placed in a container in successive layers separated by layers of particulate salt. Heat is taken up from the dross not only in elevating the temperature of the salt, but also as heat of fusion of the salt. The salt used may comprise one or more components of a salt flux suitable for employment in subsequent procedures to recover free metal from the dross.

3,751,244

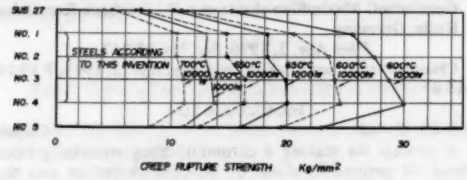
AUSTENITIC HEAT RESISTING STEEL

Tohru Mimino; Kazuhisa Kinoshita; Isao Minegishi, and Takayuki Shinoda, all of c/o Gijutsu Kenkyushon, Nippon Kokan Kabushiki Kaisha, 2730 Minamiwatarida cho, Kawasaki, Japan

Continuation-in-part of Ser. No. 773,786, Nov. 6, 1968, abandoned. This application Dec. 14, 1970, Ser. No. 97,854
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 G **5 Claims**

Cr-Ni type austenitic heat resisting steel having about twice the heat resistibility of common stainless steel is provided by the addition of 0.001 to 0.30 percent by weight Ti, 0.001 to

0.30 percent by weight Nb + Ta, and 0.0001 to 0.05 percent by weight B to a well-known Cr-Ni type steel composition for



elevated temperature service, and maintaining a specified balance of [Ti + 0.5 (Nb+Ta)] to C and a specified balance of Ti to [Ti+0.5 (Nb+Ta)].

3,751,245

METHOD OF MAKING AUSTENITE TYPE STAINLESS STEEL

Masazi Uemura, Amagasaki, and Yasuteru Yamada, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries, Limited, Osaka City, Japan

Continuation-in-part of Ser. No. 840,610, July 8, 1969, abandoned. This application Feb. 24, 1972, Ser. No. 229,103

Int. Cl. C22c *33/00*; **B22d** *13/00*

U.S. Cl. 75—130.5 **2 Claims**

A method for rotary casting of austenitic stainless steels. When rotarily cast, steel ingots are likely to crack on the surface. In order to prevent cracking, it is desirable to adjust the Nickel balance to within a certain value. In stopping the rotation, ghost rings can be prevented by a gradual deceleration of the speed of rotation.

3,751,246

PHOTOCONDUCTIVE ELEMENTS EMPLOYING N-VINYL CARBAZOLES HAVING FUSED CONDENSED ARENIC RING STRUCTURES

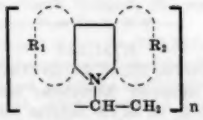
Helen C. Printy, Cleveland, and Evan S. Baltazzi, Northfield, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 698,420, Jan. 17, 1968, abandoned. This application Sept. 7, 1971, Ser. No. 178,368

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **19 Claims**

Organic photoconductive materials which are N-vinyl carbazoles having fused condensed arenic ring structures having the following general formula:



in which R_1 and R_2 are fused condensed arenic ring structures having from four to 12 carbon atoms and *n* is an integer greater than 1. The material may be used in the monomeric form dispersed in a resin binder and applied to a base support or polymerized forming a photoconductive film when applied to a suitable support.

3,751,247

PHOTOCONDUCTIVE COMPOSITIONS CONTAINING FERROCENE-CONTAINING ALDEHYDE POLYMERS

David W. Swan, Harlow, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 8, 1971, Ser. No. 132,592

Claims priority, application Great Britain, Apr. 8, 1970, 16758

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **14 Claims**

This invention relates to photoconductive compositions which become permanently conductive when exposed to actinic radiation. The compositions comprise a ferrocene-containing polymer in intimate association with another compound, which is preferably one containing halogen atoms, the composition forming a conductive reaction product when exposed to actinic radiation. These compositions are useful in the preparation of photoconductive layers which can be used in image reproduction processes particularly to copy finely-detailed originals giving continuous tone copies.

3,751,248

METHOD OF SELECTIVE MULTILAYERED ETCHING

James Emanuel Goell, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 826,436, May, 1969, abandoned. This application Dec. 27, 1971, Ser. No. 212,798

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.2 **8 Claims**

A method for selectively etching a workpiece to different depths with a single multicolored photomask. In particular, the multicolored mark is used to selectively expose separate layers of photoresist. The separatelayers of photoresist are developed, and then selectively removed after performing a desired masking function. This method is particularly useful in fabricating resistor-conductor patterns for integrated circuits.

3,751,249

PHOTOTHERMIC SILVER HALIDE ELEMENT CONTAINING A BIS-BETA-NAPHTHOL REDUCING AGENT AND A 1, 3-DIHYDROXY-BENZENE REDUCING AGENT

Gary Lynn Hiller, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,464

Int. Cl. G03c *5/26*, *1/04*

U.S. Cl. 96—50 R **24 Claims**

In photosensitive materials for processing with heat, a combination of a bis-beta-naphthol reducing agent with a 1,3-dihydroxybenzene reducing agent, such as 2,4-dihydroxybenzaldehyde or 2,4-dihydroxybenzophenone, provides surprisingly increased relative speed, maximum density and exposure latitude. This combination of reducing agents can be used in photosensitive and thermosensitive materials for processing with heat. These materials can contain addenda commonly employed in photosensitive materials such as activator-toning agents, stabilizers or stabilizer precursors, sensitizing dyes and the like.

3,751,250

METHOD FOR PHOTOEXPOSING A COATED SHEET PRIOR TO ETCHING

John Joseph Moscony, Lancaster, and Ronald Lester Kennard, Landisville, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 8, 1972, Ser. No. 251,384

Int. Cl. G03c *5/00*

U.S. Cl. 96—36 **6 Claims**

A method for photoexposing a coated sheet in a vacuum printing frame employs at least one glass plate including a photographic master pattern in the central area thereof, and peripheral areas having surfaces that have been sandblasted, etched, or otherwise removed to a depth of at least 0.003 inch.

3,751,251
METHOD FOR PREPARING BLEACH-FIX REGENERATOR CONCENTRATE

John J. Surash, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1972, Ser. No. 231,003
Int. Cl. G03c 5/26, 5/32, 5/38
U.S. Cl. 96—50 A 10 Claims

A method is described for preparing bleach-fix regenerator concentrates which remain free of crystalized precipitate after prolonged storage and which are useful in the regeneration of photographic bleach-fix solutions which employ a ferric salt of an aminopolycarboxylic acid as a bleaching agent and a thiosulfate as a fixing agent.

The method comprises the steps of:

a. dissolving an aminopolycarboxylic acid and thiosulfate ion in an aqueous alkaline medium; and

b. adding sufficient gaseous sulfur dioxide to the solution of (*a*) to lower the pH thereof to between about 5.4 and 6.0.

3,751,252
PHOTOTHERMOGRAPHIC ELEMENT AND PROCESS

Gale E. Smith, and Paul Hartman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,932
Int. Cl. G03c 1/60, 1/72
U.S. Cl. 96—63 17 Claims

Hydroxamic acid reducing agents in a photothermographic element or process for developing a latent image with heat provide a developed image having increased maximum density. They can be employed in an oxidation-reduction image forming combination wherein the hydroxamic acid is used as the reducing agent. Addenda employed in photothermographic elemnts and processes, such as activator-toning agents, sensitizing dyes and stabilizer precursors can be employed with the hydroxamic acid reducing agents.

3,751,253
FILM PACKAGE

Mark J. Cohn, 123 S. Berkley Sq., Atlantic City, N.J.

Division of Ser. No. 788,731, Jan. 3, 1969, Pat. No. 3,613,545.
This application June 3, 1971, Ser. No. 149,606
Int. Cl. G03c 3/00; G03b 17/26; G03c 1/00
U.S. Cl. 96—67 6 Claims

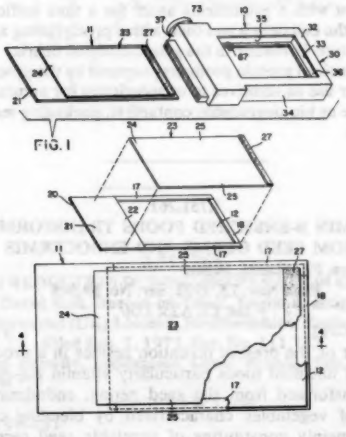


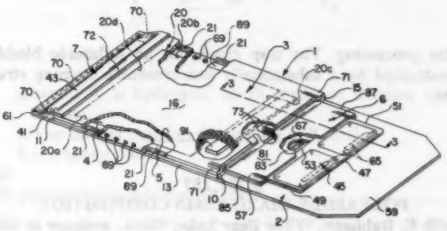
FIG. 1

A housing for holding film in operative association with a camera, the housing having an edge slot for insertion and withdrawl of the film, a pressure roll in the housing for rolling engagement with the film package upon insertion and withdrawal thereof, and a coiling roll in the housing engageable with a film package upon insertion to open the package for exposure within the camera and to close the film package upon withdrawal from the housing.

3,751,254
PHOTOGRAPHIC FILM UNIT

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,465
Int. Cl. G03c 1/48
U.S. Cl. 96—76 R 31 Claims



A photographic film unit of the self-processing type includes preregistered photosensitive and process elements mounted on a carrier sheet having a cooperating pod for supplying a fluid processing composition to the preregistered elements and a trap for receiving and retaining any excess processing composition from the elements. The preregistered elements are easily separable from the carrier sheet, pod, and trap, the pod and trap being permanently coupled to the carrier sheet for convenient disposal after processing. An extension of the pod is interposed between the leading ends of the preregistered elements to direct the processing composition between the elements, and a coating of cohesive cement is provided on the interior surface of each of those ends to couple the two together after the processing composition has passed between them. A coating of cohesive cement is also provided on the interior surfaces of the pod extension to seal the extension closed after the processing composition has passed through it.

3,751,255
PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENT, COMPOSITION AND PROCESS

Burton D. Wilson; Grant M. Haist, both of Rochester, and Ismael A. Olivares, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,933
Int. Cl. G03c 5/00, 5/30, 1/42
U.S. Cl. 96—66 R 19 Claims

Sulfhydroxamic acids are active developing agents for photographic silver salts in strongly alkaline solutions. They form super additive mixtures with other silver halide developing agents. They may be incorporated in silver halide emulsions and they can be activated by immersion in alkali or by application of heat. They may be used in chemical or physical development such as in diffusion transfer processing.

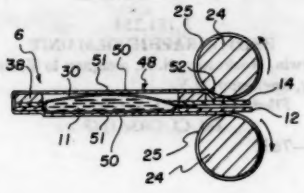
3,751,256
FLUID RECEIVING MEANS

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,046
Int. Cl. G03c 1/48
U.S. Cl. 96—76 C 10 Claims

An improved fluid receiving structure or trap for use with a self-processing photographic film unit or the like. The trap is

best adapted for use in composite or integral film units in which it is permanently locatable entirely within the borders of the unit, making unnecessary its separation from the unit



after processing. The trap comprises an inflatable bladder constrained by a substantially non-crushable framing structure.

3,751,257

POLYAMIDE-DIAZO RESIN COMPOSITION

Keith E. Dahlman, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 16, 1971, Ser. No. 134,615

Int. Cl. G03c *1/52*; G03f *7/02*

U.S. Cl. 96—91 R **14 Claims**

An oleophobic composition suitable as the ink-receptive areas for printing plates comprising as a dried coating at least 50 percent by weight of light-sensitive diazo resin and no more than 50 percent by weight of a polyamide resin. The printing plate so provided is developed by an aqueous solution of a wetting agent which removes unexposed portions of the diazo-polyamide resin coating without any substantial effect on the exposed portions.

3,751,258

AUTOSTEREOGRAPHIC PRINT ELEMENT

Donald J. Howe, and John C. Hoppe, both of Spencerport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,214

Int. Cl. G03c *1/84*

U.S. Cl. 96—81 **10 Claims**

Autostereographic prints are made by photographic means in which a transparent support having one surface lenticulated carries on the opposite surface at least one radiation-sensitive layer such as a silver halide emulsion layer over which the sensitive layer farthest from the support is coated a highly reflective layer such as one containing titanium dioxide pigment, which is preferably permeable to the processing baths required to process the radiation-sensitive layer.

3,751,259

PHOTOPOLYMERIZABLE COPYING COMPOSITION

Sigrid Bauer, Hahn/Taunus; Kurt-Walter Klupfel, Wiesbaden-Sonnenberg, and Raimund Josef Faust, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed June 2, 1971, Ser. No. 149,396

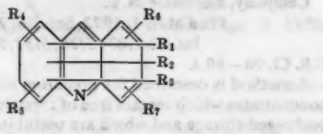
Claims priority, application Germany, June 4, 1970, P 20 27 467.3

Int. Cl. G03c *1/70*

U.S. Cl. 96—115 P **5 Claims**

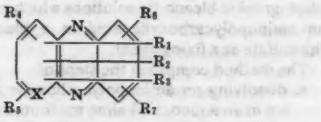
This invention relates to a photopolymerizable copying composition comprising at least one binder, at least one polymerizable compound and at least one photoinitiator having one of the formulae:

I



and

II



in which R_1, R_2, and R_3 are selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, amino, acylamino, and aralkenyl groups,

R_4, R_5, R_6 and R_7 are H or annelated benzene rings, with no more than two annelated benzene rings being present per molecule, however, and

X is selected from the group consisting of

and C.

3,751,260

PROCESS FOR TEXTURIZING MICROBIAL CELLS BY INDUCED CELL LEAKAGE

Cavit Akin, Oakbrook, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Jan. 20, 1971, Ser. No. 108,144

Int. Cl. A23j *3/00*

U.S. Cl. 99—14 **15 Claims**

Protein-containing single cell micro-organisms are prepared into texturized products by a process in which an aqueous slurry of protein-containing microbial cells is first mixed with a surface active agent to chemically promote partial leakage of inner cell components through the cell walls, after which the leaked inner cell components are separated from residual protein-containing cell debris and the residual cell debris treated first with a gelatinizing agent for a time sufficient to gelatinize the cell debris and then with a precipitating agent to induce texture formation in the gelatinized cell debris.

The texturized protein products prepared by the process are suitable for use as additives to or substitutes for natural foods and for use as bio-degradable containers, packaging materials or utensils.

3,751,261

VITAMIN B-ENRICHED FOODS TRANSFORMED FROM SEED GERMS AND ENDOCERMIS

Seizo Tatara, Funabashi, Japan

Filed Nov. 13, 1970, Ser. No. 89,505

Int. Cl. A23l *1/30*

U.S. Cl. 99—11 **3 Claims**

The gist of the present invention resides in a production method of nutrified foods particularly vitamin B_{12}-enriched foods transformed from the seed germs, endodermis and medulla of vegetables characterized by blending crushed powders mainly constituting of vegetable seed germs and endodermis, to which vegetable medulla may be added if desired, further added with compounds of trivalent iron, calcium and magnesium and the like, blended and kneaded with an aqueous solution containing a small amount of an

ammonium cobalt complex salt of an organic oxygenated acid and the like, or if desired, with said aqueous solution added with an iodine compound and fresh milk, sterilizing on heating by steaming, followed by cultivating thereon an edible mold and yeast to effect digestion and transformation into edible and nutrified foods.

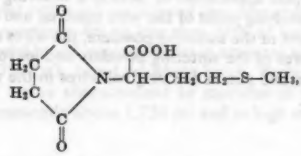
3,751,262

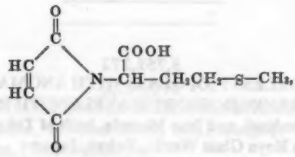
RUMINANT FEED SUPPLEMENT

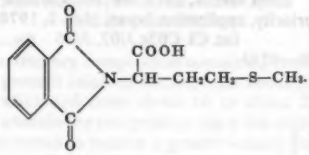
Yuoh Ku, Basking Ridge, and Paul W. Simon, Millington, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 30, 1970, Ser. No. 51,348
Int. Cl. A23k *1/22*; A61k *27/00*
U.S. Cl. 99—2 ND 4 Claims

A ruminant feed containing from about 0.02 to about 5.0 weight percent of an imide resistant to digestion in the rumen but digestible in subsequent regions of the ruminant gastrointestinal tract, said imide being a member selected from the group consisting of:







3,751,263

FOAM REDUCTION DURING PREPARATION OF BEER

Ronald David Hall, Burton-on-Trent, England, assignor to Allied Breweries (UK) Limited, Straffordshire, England

Filed Feb. 1, 1971, Ser. No. 111,753
Claims priority, application Great Britain, Feb. 2, 1970, 4,934/70
Int. Cl. C12c *11/04*
U.S. Cl. 99—31 13 Claims

Foaming is reduced during the preparation of beer by adding to wort or beer a silicone antifoam material, followed by removing the antifoam material by contacting the beer with an adsorbent whereby foaming capability is restored to the beer.

3,751,264

PRESERVATION OF BEER

Frede B. Strandskov, North Caldwell, N.J., assignor to The F. & M. Schaefer Brewing Company, Brooklyn, N.Y.

Filed July 13, 1971, Ser. No. 162,257
Int. Cl. C12h *1/00*
U.S. Cl. 99—48 8 Claims

Undesirable microbial growth in beverages, particularly in malt beverages is prevented by serially admixing with the beverage

A. a compound of the formula

wherein X is hydrogen, alkali metal or alkaline earth metal,

n is an integer equal to the valence of X, and

R is a heptyl radical,

and

B. pyrocarbonic acid diethyl ester.

3,751,265

SHORTENING FOR HIGHLY AERATED CREAMY FROSTINGS

Paul Seiden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 30, 1971, Ser. No. 214,484
Int. Cl. A23g *3/00*
U.S. Cl. 99—139 4 Claims

A shortening for use in highly aerated creamy frostings comprises: (a) a liquid glyceride such as partially hydrogenated soybean oil, (b) propylene glycol monostearate, (c) partial esters of polyglycerol, and (d) polyoxyethylene sorbitan tristearate.

3,751,266

PRODUCTION OF ISOMERIZED HOP EXTRACTS

Yoshiro Kuroiwa; Eiichi Kokubo; Koichiro Aramaki, and Hiroshi Uehara, all of Takasaki, Japan, assignors to Kirin Beer Kabushiki Kaisha, a/k/a Kirin Brewery Co., Ltd., Tokyo-to, Japan

Filed July 22, 1970, Ser. No. 57,298
Claims priority, application Japan, July 24, 1969, 44/58556
Int. Cl. C12c *9/02*
U.S. Cl. 99—50.5 6 Claims

To an aqueous alkali extract containing iso-α-acids, prepared by subjecting hops to extraction of α-acids therefrom and isomerization thereof in an aqueous alkali, an acid is added to adjust the pH value of the extract to a value of from 4.0 to 5.7 thereby to cause precipitation of coexisting impurity materials existing in dissolved state, whereas the iso-α-acids remaining in dissolved state, and the resulting precipitate is removed, whereupon an isomerized hop extract of high iso-α-acid utilization is produced without any harmful organic solvent.

3,751,267

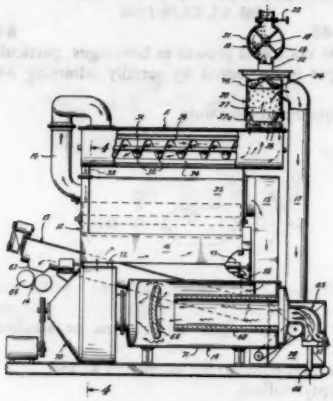
MATERIAL TREATING METHOD

Norman H. Sachnik, Houston, Tex., assignor to Range Engineering Development Corporation, Ft. McKavett, Tex.

Filed Aug. 19, 1971, Ser. No. 173,066
Int. Cl. F27b *15/00*
U.S. Cl. 99—81 14 Claims

This patent discloses a method for treating material such as grain, manure, alfalfa, lightweight aggregate, etc. Hot air circulates throughout the entire system. Heat is first added where

desired to the product in a preheater. Additional heat is then added in a heater section where the material is further heated



and material such as grain may be popped if desired. The grain may then be passed through conventional rollers.

3,751,268

METHOD OF COATING FOOD PRODUCTS WITH UNGELATINIZED UNMODIFIED HIGH AMYLOSE STARCH PRIOR TO DEEP FAT FRYING

Eric M. Van Patten, Tinley, and James A. Freck, Naperville, both of Ill., assignors to American Maize-Products Company, New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,998
Int. Cl. A23l *1/12*
U.S. Cl. 99—100 **9 Claims**

A process for preparing deep fried foods and especially french fried potatoes is disclosed. The french fries are coated with 0.1 to 1.5 percent of an unmodified ungelatinized high amylose starch having an amylose content of at least 50 percent. The resulting product has improved texture and absorbs less oil than french fries prepared by conventional methods.

3,751,269

IMPARTING ONIONY FLAVOR TO FOODSTUFFS WITH THIO-COMPOUNDS

Michael H. Brodnitz, Matawan; John V. Pascale, Old Bridge, and Manfred H. Vock, West Orange, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 13,816, Feb. 24, 1970, Pat. No. 3,686,323. This application Jan. 7, 1971, Ser. No. 104,758. The portion of the term of this patent subsequent to Aug. 22, 1989, has been disclaimed.
Int. Cl. A23l *1/26*; C07c *151/00*
U.S. Cl. 99—140 R **4 Claims**

Onion flavoring compounds, including thioalkanal-S-oxides and alkyl alkene thiosulfonates, methods for preparing and using such compounds, and compositions so obtained.

3,751,270

SUGAR COMPOSITIONS CONTAINING AGLYCONIC DIHYDROCHALCONES

George P. Rizzi, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 30, 1970, Ser. No. 76,974
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 A **19 Claims**

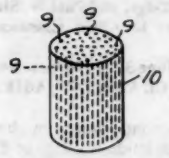
Sweetening compositions comprising a natural sugar co-dissolved with certain aglyconic dihydrochalcones.

3,751,271

SINTERED FILTER HAVING STRAIGHT HOLES THERETHROUGH

Takashi Kimura; Hiroshi Hamamoto; Azusa Majima; Yoji Awano; Yukio Inaguma, and Mitsuo Tomatsu, all of Nagoya-shi, Aichi-ken, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed May 11, 1971, Ser. No. 142,166
Claims priority, application Japan, May 12, 1970, 45/40824
Int. Cl. C04b *35/10*; B22f *3/10*
U.S. Cl. 106—40 R **6 Claims**



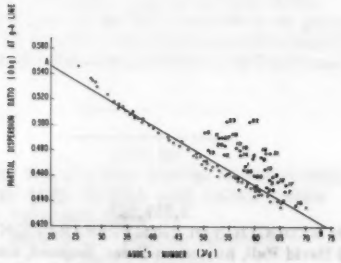
A sintered metal, or ceramic filter having parallel, straight holes of uniform diameter and with smooth inner surfaces passing therethrough is formed by sintering a green compact about a large number of straight wires arranged parallel to one another. Upon application of heat at a sintering temperature above the melting point of the wire material and less than the melting point of the sintering powders, the wires are absorbed into the pores of the sintering powders and leave holes of the same shape and size as the original wires in the resulting sintered filter.

3,751,272

COLORLESS P_2O_5 GLASS WITH ANOMALOUS DISPERSION IN SHORT WAVELENGTH REGION

Tetsuro Izumitani, and Isao Masuda, both of Tokyo, Japan, assignors to Hoya Glass Works, Tokyo, Japan

Filed Mar. 2, 1971, Ser. No. 120,232
Claims priority, application Japan, Mar. 2, 1970, 45/17757
Int. Cl. C03c *3/02, 3/16*
U.S. Cl. 106—47 Q **7 Claims**



A glass having an anomalous dispersion consisting of, by weight, calculated as the component oxides of said glass, from 38 to 70% P_2O_5, from 1.0 to 5.0% B_2O_3 and from 1 to 10% Al_2O_3as glass-forming materials, wherein the sum of the amount of said $B_2O_3$and Al_2O_3 is from 2 to 15%; from 4 to 38% BeO, from 2 to 17% MgO, from 0 to 10% ZnO, from 1 to 8% CaO, from 0 to 10% SrC and from 0 to 3% As_2O_3 as glass

modifiers, wherein the sum of the amount of said BaO, MgO, ZnO, CaO, SrO and As_2O_3 is 51 to 60%; and from 0.05 to 4.0%, based on the total weight of said glass-forming materials and said glass modifiers, of TiO_2.

3,751,273

BURNED BASIC REFRACTORY AND BATCH THEREFOR

Michael A. Nelson, Jeffersonville, Ind.; Robert F. Patrick, Louisville, Ky., and Thomas M. Wehrenberg, Jeffersonville, Ind., assignors to Corhart Refractories Company, Louisville, Ky.

Filed June 22, 1971, Ser. No. 155,624
Int. Cl. C04l *35/42, 35/48*
U.S. Cl. 106—57 13 Claims

Compacted and burned refractory body made from size-graded particulate batch mixture of chemical grade (Transvaal) chromite grain with low-silica content, periclase grain, fused grain of magnesia-chemical grade chromite and containing 40–58% MgO, and ZrO_2-yielding material. Chromite grain forms 10–35% of batch as −10+150 mesh particles, with less than 12% thereof being −100 mesh. The periclase grain and fused grain form three particle fractions: 25–60% of batch being coarse −4+20 mesh composed of (as percent of batch) 5–60% fused grain and 0–40% periclase grain, 0–30% of batch being intermediate −10+35 mesh, and 15–60% of batch being fine −35 mesh, of which periclase grain is at least 10% of batch. The total +28 mesh particles of chromite grain and periclase grain constitute 4% to less than 50% of batch. ZrO_2-yielding material is −65 mesh particles in amounts sufficient to provide 0.5–7% ZrO_2 based on whole batch. Body burned at 1,650° C. or higher characterized by modulus of rupture at 1,340° C. consistently above 1,750 psi and as high as 2,000 psi or higher.

3,751,274

PLASTIC ALUMINA-SILICA REFRACTORY

Wate T. Bakker, Severna Park, Md., assignor to General Refractories, Philadelphia, Pa.

Filed Aug. 16, 1971, Ser. No. 171,880
Int. Cl. C04b *35/14*
U.S. Cl. 106—68 7 Claims

A plastic refractory composition containing from about 45 to about 50 percent calcined Kaolin, from about 20 to about 40 percent silica and from about 10 to about 25 percent plastic clay, wherein the composition has a low alkali content, has been discovered to possess a greater volume stability and refractoriness under load than conventional refractories presently in use in high temperature furnaces.

3,751,275

INORGANIC PROTECTIVE COATINGS

Aaron Oken, 805 E. Matson Run, Wilmington, Del.

Filed Jan. 26, 1971, Ser. No. 109,935
Int. Cl. C04b *7/02*
U.S. Cl. 106—90 11 Claims

New compositions of matter are provided which are substantially inorganic in composition and which are strongly resistive to deterioration by the action of light, air and/or water. The compositions are anhydrous mixtures of a silicate ester and a hydraulic cement, and such mixtures may contain a catalyst. The silicate ester may be an ethyl polysilicate and the moisture reactive filler may be a material such as portland cement. The alkaline catalyst may be a material such as an alkali metal alkoxide. The ingredients are uniformly blended and in use the mixture is exposed to air in the form desired, usually a thin coating. Upon exposure to the moisture in air, drying occurs with the formation of very hard finishes which are highly crack resistant.

3,751,276

REFRACTORY LAMINATE BASED ON NEGATIVE SOL OR SILICATE AND POSITIVE SOL

James N. Beyer; Earl P. Moore, Jr., and Robert L. Rusher, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 49,916, June 25, 1970, abandoned. This application June 1, 1971, Ser. No. 148,956
Int. Cl. C04b *35/14*
U.S. Cl. 106—38.3 11 Claims

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the surface alternately, in either order, in (1) a bath comprising a sol of negatively charged colloidal particles and/or a solution of an alkaline ionic silicate and (2) a bath comprising a sol of positively charged colloidal particles, until a laminate of the desired thickness is built up on the surface. In order to increase the rate of laminate build up, particulate refractory material can be included in the baths and/or the coated surface can be stuccoed between dips. Interaction between the negatively charged colloidal particles or silicate and the positively charged colloidal particles results in a setting action which immobilizes the coatings as they are applied, thus making it unnecessary to dry between dips. The process is particularly suited for making expendable, refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.

3,751,277

TABLET COATING PROCESS AND COMPOSITION

James E. Small, Sheridan, Ind., and Sampson F. Jeffries, Newport Beach, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 799,984, Feb. 17, 1969, abandoned. This application Mar. 24, 1971, Ser. No. 127,786
Int. Cl. C08b *27/22*
U.S. Cl. 106—213 8 Claims

A composition for coating tablets and other individual dosage forms comprising a sugar, hydrolyzed cereal solids, starch, a solid polyethylene glycol and a liquid polyhydroxy organic compound is disclosed. The composition can be employed to coat tablets by applying aqueous solutions thereof to the tablets and drying the solvent.

3,751,278

METHOD OF TREATING ASPHALT

Stephen H. Alexander, St. Louis, Mo., assignor to Tosco-Lion, Inc., El Dorado, Ark.

Continuation of Ser. No. 31,779, April 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 489,061, Sept. 21, 1965, abandoned. This application Mar. 6, 1972, Ser. No. 232,202
Int. Cl. C08h *13/00*; C09d *3/24*
U.S. Cl. 106—273 R 10 Claims

The method of treating asphalt by mixing without air-blowing a vacuum distilled asphalt and a mixture of phosphoric acids having an H_3PO_4 equivalent of greater than 100 percent concentration at elevated temperatures and the asphalt compositions thus prepared having significantly increased viscosity.

3,751,279
PIGMENT COMPOSITIONS AND PROCESS FOR PREPARING THEM

Theodor Papenfuss; Rolf Rehberg, both of Niederhofheim, Taunus, and Ernst Spietschka, Oberauroff, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Brunning, Frankfurt/Main, Germany

Filed Apr. 15, 1971, Ser. No. 134,473
Claims priority, application Germany, Apr. 16, 1970, P 20 18 168.4
Int. Cl. C07d *7/42*; **C09b** *67/00*
U.S. Cl. 106—288 Q **5 Claims**

Pigment compositions of resins and xanthene dyestuffs, which are prepared by dissolving the dyestuff salt with the addition of alkali in an organic solvent miscible with water or in an organic amine, dissolving in this solution such a resin which can be precipitated again by addition of an acid, or adding such a solution of such a resin in one of the said solvents, mixing the mixture thus obtained with an aqueous acid and recovering the pigment composition precipitated. The pigment compositions according to the invention are distinguished by an extraordinary good brilliance of the prints produced therewith. They are extremely easy to disperse in printing varnishes and therefore especially valuable in use.

3,751,280
METHOD OF PRODUCING A PHOTOGRAPHIC FILM BASE HAVING A SUBBING LAYER

Mohanlal Shantaram Nerurkar, and Paul Ernest Dawson, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

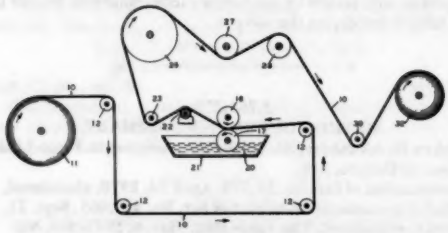
Filed Feb. 1, 1971, Ser. No. 111,749
Claims priority, application Great Britain, Feb. 6, 1970, 5,794/70
Int. Cl. B29d *7/24*; **B44d** *1/14*; **G03c** *1/84*
U.S. Cl. 117—7 **9 Claims**

Coating of biaxially oriented polyester films with a subbing composition including a polymeric and a water-permeable component such as gelatin before the film is fully oriented.

3,751,281
METHOD FOR PREPARING A DIMENSIONALLY STABLE WAXED POLYETHYLENE SHEET

James Thomas Peterson, Oshkosh, Wis., and Mitsuzo Shida, Barrington, Ill., assignors to American Can Company, Greenwich, Conn., by said Peterson and Chemplex Company, Rolling Meadows, Ill., by said Shida, part interest to each

Filed Feb. 17, 1972, Ser. No. 227,192
Int. Cl. B05c *3/107*
U.S. Cl. 117—7 **7 Claims**



This invention relates to a method for applying a wax coating to one or both sides of a polyethylene-based film which eliminates a hitherto troublesome problem of dimensional instability of the overwaxed film. More specifically, this invention provides a method for producing a waxed polyethylene film having a degree of dimensional stability heretofore not achieved.

3,751,282
METHODS FOR COLOR PRINTING AND ARTICLES MADE THEREBY

Neal N. Massa, Brooklyn, N.Y., assignor to Chroma Printing Corp., New York, N.Y.

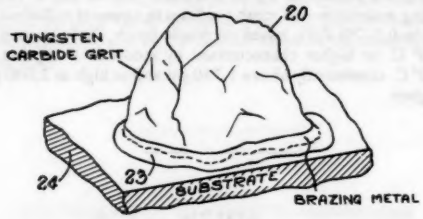
Filed July 8, 1971, Ser. No. 160,923
Int. Cl. B44c *3/02*
U.S. Cl. 117—13 **6 Claims**

Methods of color printing of solid areas to create a frosted or shimmering effect including the combining of a layer of colored ink with a layer of finely divided white pigment, optionally supplemented by a small amount of finely divided metallic pigment. In one of the methods, the ink layer is first deposited, and the white pigment layer is applied thereover, using a bronzing machine in which the amount of white pigment applied is carefully controlled to prevent opacity. In another method, the white pigment layer is first applied, and is overprinted with a transparent colored ink.

3,751,283
ARMORED METAL TOOLS AND PRODUCTION THEREOF

Chester H. Dawson, Danbury, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Division of Ser. No. 813,426, April 4, 1969, abandoned. This application Mar. 8, 1971, Ser. No. 122,213
Int. Cl. C23c *3/00*
U.S. Cl. 117—22 **1 Claim**



Armored tools and production thereof comprising a structural base member composed of a base metal, having at least a surface portion embodying a tough, wear-resistant and abrasive, armoring coating produced in situ from abrasive particles of hard, high melting material selected from the group consisting of metal carbides, borides, nitrides, silicides and mixtures thereof, individually precoated with a fluxing agent and with particles of a lower melting brazing metal, said brazing metal particles precoated on said abrasive particles, respectively, being fusion bonded to each other to their respective abrasive particles and to said base metal thereat in weldments individual to said abrasive particles, and partially embedding and anchoring said abrasive particles therein, respectively, with said abrasive particles projecting beyond said embedding matrix metal weldments to form a multiplicity of sharp cutting edges.

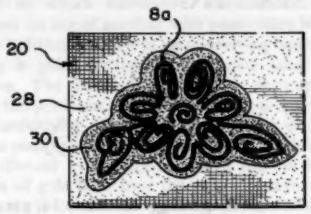
3,751,284
TONE-ON-TONE RESIN BONDED PIGMENTING OF FLOCK PRINTED FABRIC WITH LOW TEMPERATURE AIR DRYING

Richard J. Lyons, Taylors, S.C., and Luis G. Egger, New York, N.Y., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed July 2, 1971, Ser. No. 159,215
Int. Cl. D06q *1/00*
U.S. Cl. 117—28 **3 Claims**

Differentiated or multi-toned dyeing effects are obtained on flock-printed fabrics by impregnating said fabrics with a

dyestuff solution or dispersion, then drying at room temperatures. By control of the rate of drying a ring of a more concentrated dyeing surrounding a less concentrated dyed area produced at relatively high rates of speed.



3,751,285

PROCESS FOR THE PRODUCTION OF REPROGRAPHIC MATERIALS BY DEPOSITING A LIGHT-SENSITIVE LAYER BY EVAPORATION

Hans Ruckert, Wiesbaden-Schierstein; Heinz Kramer, Wiesbaden-Bierstadt, and Gustav Agustein, Rudesheim, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Bierbrich, Germany

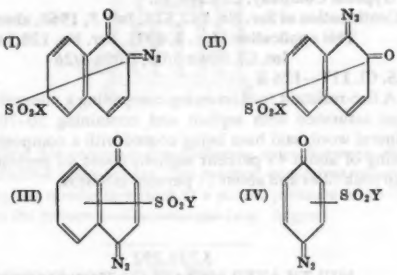
Filed Sept. 27, 1971, Ser. No. 184,299

Claims priority, application Germany, Sept. 29, 1970, P 20 47 816.4

Int. Cl. G03c *1/76, 1/94, 1/54*

U.S. Cl. 117—34 **12 Claims**

This invention relates to a process for the production of reprographic copying materials which comprises applying a light-sensitive layer to a support by evaporation at reduced pressure, the layer comprising at least one light-sensitive quinone diazide sulfonic acid derivative of the general formulae



or a nitrone of the general formula

(V) $R-(CH=CH)_n-CH=N-R'$ with $\downarrow O$

in whicl.

X is selected from the group consisting of an alkoxy group having one to 10 carbon atoms,
a cycloalkoxy group having five to 12 carbon atoms,
an aryloxy group having six to 15 carbon atoms, or
an amine group derived from a primary or secondary amine containing alkyl groups having one to 10 carbon atoms, cycloalkyl groups having five to 12 carbon atoms or aryl groups having six to 14 carbon atoms as substituents at the nitrogen or from a mononuclear N-heterocyclic compound,

Y is selected from the group consisting of an aryloxy group having six to 15 carbon atoms, or
an amine group derived from a primary or secondary amine containing alkyl groups having one to 10 carbon atoms, cycloalkyl groups having five to 12 carbon atoms or aryl groups having six to 14 carbon atoms as substituents at the nitrogen or from a mononuclear N-heterocyclic compound,

R and R′ are mononuclear aromatic groups, and

n is 0 or 1.

3,751,286

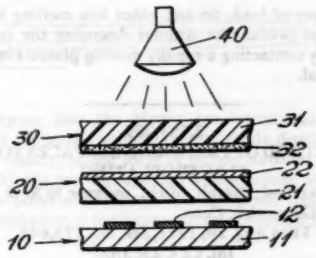
THERMOGRAPHIC TRANSFER SHEET AND PROCESS OF COPYING THEREWITH

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed July 12, 1971, Ser. No. 161,763

Int. Cl. B41m *5/22*

U.S. Cl. 117—36.2 **10 Claims**



Thermographic transfer sheet and method for making and using same. Transfer sheet comprises a plastic film foundation carrying a thin, non-transferable imaging layer comprising a crystalline, vaporizable aromatic acid, a film-forming binder material and an inert solid particulate filler material. The filler material impedes crystal growth and disrupts the continuity of the layer whereby the aromatic acid vapors are liberated under the effect of heating.

3,751,287

METHOD FOR INCORPORATING AN ADHESION PROMOTER INTO A POLYMERIC SUBSTRATE

Frederick Lawrence Baier, High Bridge, and Edward Matthew Joffe, Summit, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,369

Int. Cl. B44d *1/092;* **B32b** *27/18*

U.S. Cl. 117—47 A **8 Claims**

A treating solution and method for incorporating an adhesion promoter containing at least one allylic hydrogen into a polymeric substrate, which bath is in an aqueous reactive mixture of a hydroxyl or halogen substituted low molecular weight organic compound and a dehydrating or dehydrohalogenating agent such that the reaction thereof forms the desired adhesion promoter. This solution and method are useful in plastic metal plating.

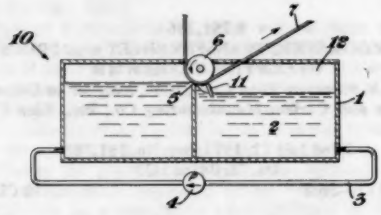
ERRATUM

For Class 117—111 see:
Patent No. 3,750,746

3,751,288
SOLIDIFYING A THIN LAYER OF METAL ON PLASTIC FILM

Turner Alfrey, Jr.; Raymond Douglas Behr, and Douglas Stewart Chisholm, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 818,533, April 23, 1969, abandoned. This application June 23, 1971, Ser. No. 156,122
Int. Cl. C23c *1/00*
U.S. Cl. 117—114 B **3 Claims**



Thin layers of lead, tin and other low melting metals are solidified on plastic film without destoying the integrity of such film by contacting a rapidly moving plastic film with the molten metal.

3,751,289
METHOD OF PREPARING SURFACES FOR ELECTROPLATING

Donald A. Arcilesi, Detroit, Mich., assignor to M & T Chemicals Inc., Greenwich, Conn.

Filed Aug. 20, 1971, Ser. No. 173,645
Int. Cl. C23c *3/00*
U.S. Cl. 117—130 R **26 Claims**

This invention relates to adherent copper films formed by immersion, or electrolytically on metallic objects from an aqueous solution of (1) a nonoxidizing acid, (2) a copper salt of a nonoxidizing acid, and (3) a polyether exhibiting at least 5 ether oxygen atoms per molecule; to processes for coating said films; and to compositions for the deposition of said adherent copper films.

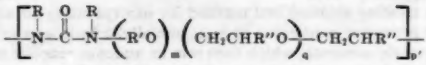
3,751,290
NONWOVEN FABRICS

Remo Santacecilia, and Edwin C. Sherburne, both of Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

Filed June 18, 1971, Ser. No. 154,685
Int. Cl. B32b *27/12;* **C09d** *3/50*
U.S. Cl. 117—140 A **7 Claims**

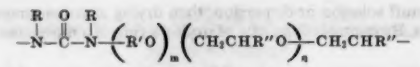
A process for binding nonwoven textiles by impregnating a nonwoven textile with a liquid application medium containing a polymer selected from the group consisting of

1. a polyurea polymer characterized by the generalized formula

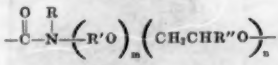


wherein m is 0 or 1, q is an integer from 1 to 13, p' is an integer from 3 to 100, R′ is an alkylene group containing from 3 to 5 carbon atoms, each R″ is independently hydrogen or methyl and each R is independently selected from the group consisting of H and CH_2OH, with the proviso that at least one R is CH_2OH and

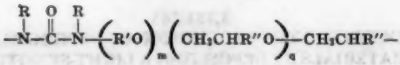
2. polyureaurethane polymers characterized by the generalized formula $(A)_x$ wherein x is an integer from 2 to 100 and each A is independently selected from the group consisting of



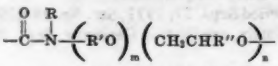
and



wherein m is 0 or 1, n is an integer from 2 to 14, q is an integer from 1 to 13, R′ is an alkylene group having from 3 to 5 carbon atoms, each R″ is independently hydrogen or methyl, and each R is independently selected from the group consisting of hydrogen and CH_2OH, with the proviso that at least one A is



and at least one A is



and with the further proviso that at least one R is a CH_2OH group.

3,751,291
FIRE RESISTANT ASPHALT ROOFING

John F. Schroeder, Wilmette, Ill., assignor to United States Gypsum Company, Chicago, Ill.

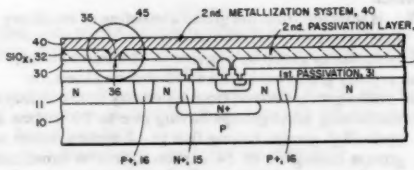
Continuation of Ser. No. 742,524, July 5, 1968, abandoned. This application Mar. 3, 1971, Ser. No. 120,747
Int. Cl. D06n *5/00;* **C09k** *3/28*
U.S. Cl. 117—126 R **3 Claims**

A fire-resistant roof covering comprising a mineral wool felt base saturated with asphalt and containing 50–70 percent mineral wool, said base being coated with a composition consisting of about 49 percent asphalt, about 40 percent ground trap rock filler and about 11 percent asbestos.

3,751,292
MULTILAYER METALLIZATION SYSTEM

Lowell S. Kongable, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 20, 1971, Ser. No. 173,542
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **9 Claims**



There is disclosed a multilayer metallization system for use with medium scale and large scale integrated circuits in which

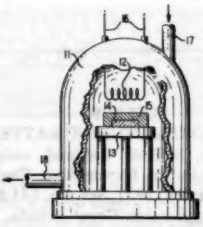
titanium-platinum-gold beam leads are used in all of the metallization systems over the integrated circuit. A method is described in which successive metallization system are stacked one on top of another with passivation in between, in which the gold top portion of an underlying beam lead is contacted by a gold portion of the beam lead immediately thereabove. The method includes as an important step, removing the platinum and titanium of an overlying beam lead from an underlying passivation layer in the vicinity of a via hole in the passivation layer prior to the formation of this hole. This is followed by the formation of the via hole and the deposition of gold both over the platinum layer and into the via hole so as to contact the gold top portion of an underlying beam lead thereby forming a gold-gold interface. The method described permits the formation of multilayered Au-Pt-Ti beam lead structures which preserve the beam lead hermetic seal, which preserve the ohmic contact qualities of the beam lead structure, and which permit the stacking of the Au-Pt-Ti beam leads without the necessity of exotic processing or interfacing materials necessary to prevent peeling and poor ohmic contact.

3,751,293

METHOD FOR REDUCING INTERDIFFUSION RATES BETWEEN THIN FILM COMPONENTS

Henry C. Theuerer, New York, N.Y., and Paul A. Turner, Murray Hill, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 4, 1969, Ser. No. 813,421
Int. Cl. C23c *13/02*; D21h *1/18*
U.S. Cl. 117—217 **5 Claims**



A method for reducing interdiffusion rates between thin film conductive components. The method comprises vacuum depositing the conductive films at a partial pressure of 10–70 nicrons in the presence of an inert gas (e.g., Argon).

3,751,294

BRUSHES FOR ELECTRICAL APPARATUS AND METHODS FOR THEIR MANUFACTURE

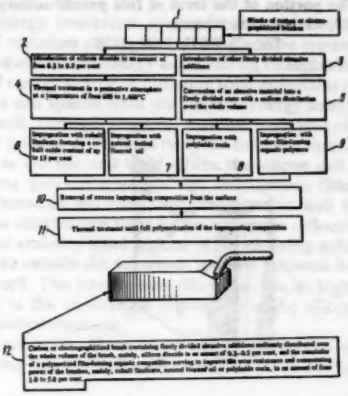
Georgy Nikolaevich Fridman, Leninsky prospekt, 67, kv. 40; Abram Samuilovich Fialkov, Kutuzovsky prospekt, 17, kv. 95; Yakov Gillevich Davidovich, prospekt Mira, 190a, korp. 9, kv. 46; Irina Dmitrievna Ivanova, Polyarnaya ul., 6a, kv. 10, all of Moscow; Ljudmila Petrovna Sysoeva, Sadovy per., 3kv. 17, Elektrougli; Abram Yakovlevich Gluskin, ul. Scherbakovskaya, 58, kv. 18, Moscow; Rimm Zigangirovich Galiskarov, Rostokinsky proezd, 2/26, kv. 4, Moscow; Esfir Lvovna Liberman, Volgogradsky prosp., 10, kv. 17, Moscow, and Vera Stepanovna Pomortseva, Svobodny prosp., 4, kv. 25, Moscow, all of U.S.S.R.

Continuation-in-part of Ser. No. 749,390, Aug. 1, 1968, abandoned. This application June 9, 1971, Ser. No. 151,432
Int. Cl. B44d *1/02*
U.S. Cl. 117—226 **4 Claims**

This invention relates to brushes for electrical apparatus and to methods for manufacturing same.

Carbon and electrographitized brushes for electrical apparatus include, according to the invention, finely divided abrasive additions uniformly distributed throughout the whole volume of the brushes, mainly, in the form of silicon dioxide, and film-forming organic polymers, such as cobalt linoleate or polyimide resins, in a polymerized state.

The method for manufacturing said brushes consists in that brush blanks are subjected to combination treatment, for



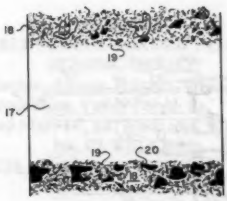
which purpose into the blanks are introduced uniformly throughout the whole volume thereof finely divided abrasive additions, mainly, in the form of silicon dioxide, whereupon the brush blanks are impregnated with solutions of film-forming organic polymers with subsequent thermal treatment until full polymerization of the impregnating composition.

3,751,295

PLASMA ARC SPRAYED MODIFIED ALUMINA HIGH EMITTANCE COATINGS FOR NOBLE METALS

Jack L. Blumenthal, Los Angeles; David F. Carroll, Torrance, and John R. Ogren, La Palma, all of Calif., assignors to The United States Atomic Energy Commission, Washington, D.C.

Continuation-in-part of Ser. No. 695,796, Jan. 4, 1968. This application Nov. 5, 1970, Ser. No. 87,055
Int. Cl. C23c *3/04*, *7/00*
U.S. Cl. 117—227 **1 Claim**



A method of applying a controlled emittance to a noble metal selected from the group including ruthenium, rhodium, palladium, osmium, iridium and platinum, and intra-alloys thereof. The coating is applied by plasma arc spraying modified alumina on a surface of one of the noble metals group, the alumina being modified by having a hydrochloric acid washed alumina powder contain a dispersion of a noble metal black selected from the above group.

A cladding of one of the group of noble metals above, having a layer of plasma arc sprayed modified alumina bonded on at least one surface thereof, the alumina being modified as indicated in the above method.

3,751,296

ELECTRODE AND COATING THEREFOR

Henri Bernard Beer, Kaimthout, Belgium, assignor to Chemnor Aktiengesellschaft, Vaduz, Liechtenstein

Division of Ser. No. 702,695, Feb. 2, 1968, Pat. No. 3,632,498. This application May 19, 1971, Ser. No. 144,906

Claims priority, application Great Britain, Feb. 10, 1967, 6,490/67The portion of the term of this patent subsequent to Jan. 4, 1989, has been disclaimed.

Int. Cl. B01k *3/04, 3/06*

U.S. Cl. 117—230 9 Claims

An electrode for use in an electrolytic reaction. The electrode has an electrically conductive base, preferably of a film-forming metal, the outside of which is a conductive material other than a film-forming metal, such as a layer of oxide of the base metal, and which is resistant to the electrolyte. At least a portion of the surface of said base has a coating of a mixed crystal material consisting essentially of at least one oxide of a film-forming metal and at least one oxide of a platinum group metal.

3,751,297

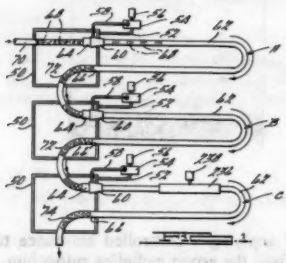
METHOD FOR SIMULTANEOUS FLUID PROCESSING AND CONVEYING

Louis J. Minbiole, Jr., Detroit; Chester G. Clark, Grosse Pointe Woods, and John W. Neumann, Birmingham, all of Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Division of Ser. No. 774,923, Nov. 12, 1968, Pat. No. 3,664,354. This application Mar. 6, 1972, Ser. No. 232,116

Int. Cl. B05c *3/08;* B08b *3/08, 3/10;* B67c *1/00*

U.S. Cl. 134—30 17 Claims



A method for simultaneously treating and conveying workpieces and an apparatus for practicing the method by which a rapidly moving confined stream of a treating fluid is formed into which workpieces are introduced for entrainment and conveyance thereby and are subsequently extracted from the stream and thereafter successively introduced, if desired, into separate succeeding streams in an ordered sequence, thereby performing a multiple-stage treatment of the workpieces.

3,751,298

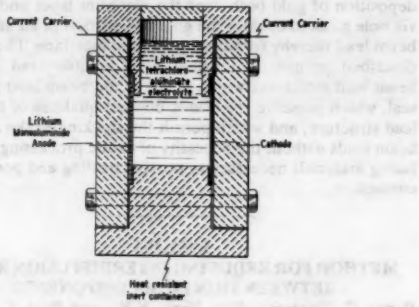
THERMAL, RECHARGEABLE ELECTROCHEMICAL CELL HAVING LITHIUM MONOALUMINIDE ELECTRODE AND LITHIUM TETRACHLOROALUMINATE ELECTROLYTE

Seymour Senderoff, Fairview, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed May 21, 1971, Ser. No. 145,703

Int. Cl. H01m *21/14*

U.S. Cl. 136—6 F 6 Claims



Thermal, rechargeable electrochemical cells are disclosed which have, in the charged condition, a lithium monoaluminide anode and a lithium tetrachloroaluminate electrolyte. The cathode can be any suitable material.

3,751,299

METHOD OF MANUFACTURING BATTERY PLATES

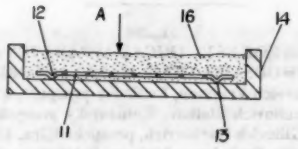
John Henry McNab, Solihull, England, assignor to Joseph Lucas (Industries Limited, Birmingham, England

Filed May 10, 1971, Ser. No. 141,819

Claims priority, application Great Britain, May 28, 1970, 25,668/70

Int. Cl. H01m *35/08*

U.S. Cl. 136—9 3 Claims



In a method of manufacturing a battery plate for an electric storage battery a conductive grid is placed into a mould, the grid being provided with a plurality of projections so that the surface of the grid adjacent the mould is spaced from the mould and the metal from which the plate is to be formed is inserted in powder form into the mould so as to cover the grid and fill the spaces between the grid and the mould. The powder in the mould is treated with an acid which firstly removes the oxide film from the particules of the powder secondly causes the powder to swell, the particles of the powder becoming united with each other and the grid by cold welding. The swollen powder is finally pressed to the required size.

3,751,300

METHOD FOR MANUFACTURING A CADMIUM OXIDE ELECTRODE WITH A RESIN FIBER

Shobei Yamamoto, Toyonaka; Jun Watanabe, Osaka; Susumu Hosoi, Neyagawa, and Akira Hirano, Osaka, all of Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan

Continuation of Ser. No. 782,264, Dec. 9, 1968, abandoned. This application June 8, 1971, Ser. No. 151,134
Int. Cl. H01m 43/04
U.S. Cl. 136—24 1 Claim

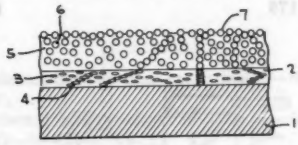
An alkaline battery which comprises a sheet-like negative electrode consisting of a fibrous substance having a powder of active material and if necessary a powder of electrically conductive material attached thereto, and which is large in discharge capacity and long in service life, and has an excellent overcharging characteristic particularly when the said alkaline battery is of the closed-type.

3,751,301

RESERVE BATTERY ELECTRODES USING BONDED ACTIVE MATERIALS

Timothy J. Kilduff, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 847,906, Aug. 6, 1969, Pat. No. 3,629,007. This application July 13, 1970, Ser. No. 54,273
Int. Cl. H01m 39/00
U.S. Cl. 136—26 4 Claims



Reserve battery electrodes and a method for preparing said electrodes wherein a metal support body is coated with a substantially non-corrodable electrically conductive material and then over-coated with an active material, for example, lead dioxide, dispersed in a resinous binder. The non-corrodible electrically conductive underlayer is applied in an amount sufficient to prevent corroding of the metal support body and sufficient to prevent formation of an interfacial resistance barrier between the metal support body and the subsequently applied coating. The electrically conductive material is applied to the support body in admixture with a thermosetting resin. Alternatively, the metal support body is flash-plated with a metal which is either inert to oxidation when in contact with the active material or forms a conductive oxide in contact with the active material. In the first embodiment, the active material is applied to the first layer in admixture with a thermosetting resin. Activation time can be reduced by applying dry lead-dioxide particles to the surface of the active material.

3,751,302

GENERATING ALTERNATING AND DIRECT ELECTRIC CURRENTS BY MODIFIED FUEL CELLS

Carsten Ingeman Johnsen, 26 LeBrun Ave., Amityville, L.I., N.Y.

Filed Apr. 20, 1970, Ser. No. 30,097
Int. Cl. H01m 27/00
U.S. Cl. 136—86 E 5 Claims

The activity of a fuel cell is improved by using secondary electrodes to intensify ion-transport between fuel cell electrodes and rotating of the fuel cell to produce oscillating electric pulsations.

3,751,303

ENERGY CONVERSION SYSTEM

Emil Kitti, Locust, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 3, 1971, Ser. No. 149,419
Int. Cl. H01l 15/02
U.S. Cl. 136—89 11 Claims

An energy conversion system is provided for converting thermal radiation energy into electricity. The system includes a source of thermal energy and a silicon cell spaced from the thermal energy source. A radiating solid material is positioned between and spaced from the thermal energy source and the silicon cell. The radiating solid material is capable of radiating a major portion of the heat received from the thermal energy source in the spectral band where the silicon cell shows its maximum spectral response. An interference filter is positioned between the radiating solid material and the silicon cell. The interference filter has its maximum reflectivity in the strongest emission band regions of the radiating solid material which are outside the maximum spectral response band of the silicon cell. The interference filter also has its highest transmission in the wavelength region where the silicon cell has good spectral response.

This invention relates to an energy conversion system for converting thermal radiation energy to useful electrical energy.

3,751,304

STABILIZATION OF BORON PHOSPHATE SULFURIC ACID GELS

Royce E. Biddick, Edina, Minn., and John B. Ockerman, Levittown, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1971, Ser. No. 118,485
Int. Cl. H01m 9/04
U.S. Cl. 136—158 1 Claim

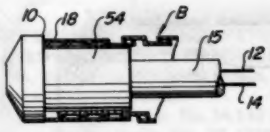
A method is described for preventing the release of liquid from a sulfuric acid boron phosphate gel used in water activated lead acid storage batteries, and more particularly the addition of an excess amount of aluminum metal, magnesium or lithium aluminum hydride to this gel.

3,751,305

ADJUSTABLE SPRING-LOADED TEMPERATURE SENSING DEVICE

David A. Huebscher, Maple Heights, Ohio, assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Mar. 10, 1971, Ser. No. 122,961
Int. Cl. H01v 1/02
U.S. Cl. 136—221 6 Claims

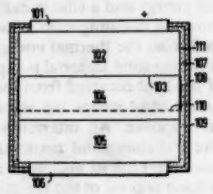


An adjustable spring-loaded temperature sensing device includes a flexible armored cable which is utilized as a spring for biasing a tip portion of a temperature sensing unit into operative position.

3,751,306
SEMICONDUCTOR ELEMENT

Norbert Schink, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 3, 1969, Ser. No. 881,751
Claims priority, application Germany, Dec. 24, 1968, P 18 16 841.7; Dec. 4, 1968, P 18 12 556.9
Int. Cl. H01l 3/12
U.S. Cl. 148—33.3 44 Claims



A semiconductor element with a semiconductor body with pn-junction at the surface. At least the pn-junction is provided with an insulating layer. The insulating coating contains bivalent lead ions, and an additive whereby an oxide coat at the surface of the semiconductor body becomes permeable to bivalent lead ions. The additive contains fluorine ions or phosphate ions.

3,751,307
THERMAL-MECHANICALLY PROCESSED LOW-ALLOY STEEL

Bill N. Briggs, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

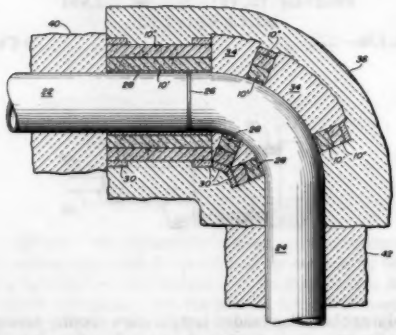
Filed Apr. 26, 1972, Ser. No. 247,643
Int. Cl. C22c 29/00, 39/20
U.S. Cl. 148—36 3 Claims

Disclosed is a low carbon-low alloy content steel which is highly responsive to thermal-mechanical processing with air hardening capability. The steel is compatible process-wise with typical tool steels useful in the impact layer of armor. The alloy steel of this invention yields a high toughness material useful as the backing material for the impact layer of armor.

3,751,308
FLEXIBLE EXOTHERMIC MAT AND METHOD OF USE

Harold F. Bishop, and James R. Deck, both of Conneaut, Ohio, assignors to Exomet, Incorporated, Conneaut, Ohio

Filed July 19, 1971, Ser. No. 163,722
Int. Cl. B23k 23/00; C21d 9/08
U.S. Cl. 148—127 5 Claims



An exothermic charge is secured to a flexible backing material forming an elongated mat. Grooves in the mat extending from the surface of the charge to the backing material allow the mat to be placed over a regular shape such as a pipe to provide a covering blanket of exothermic charge. The flexible mat is particularly useful in combination with insulation and other accessories for exothermically annealing welded pipe and the like in the field.

3,751,309
THE USE OF A GLASS DOPANT FOR GAP AND ELECTROLUMINESCENT DIODES PRODUCED THEREBY

Lincoln Derick, Colonia; Andrew Stephen Jordan, Short Hills, both of N.J.; Hans Willem Verleur, Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

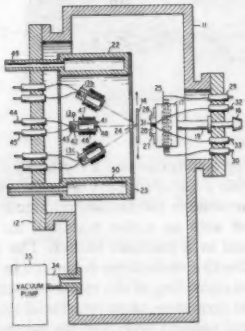
Filed Mar. 29, 1971, Ser. No. 128,998
Int. Cl. H01l 7/38, 7/40
U.S. Cl. 148—171 10 Claims

$Zn(PO_3)_2$, as a low melting point glass, is used as the zinc and oxygen doping source in the growth of the p-type region of gallium phosphide electroluminescent diode material. It is a relatively low vapor pressure liquid above 872°C permitting intimate contact with the GaP containing melt and rapid solution therein during crystal pulling or liquid phase epitaxial crystal growth.

3,751,310
GERMANIUM DOPED EPITAXIAL FILMS BY THE MOLECULAR BEAM METHOD

Alfred Yi Cho, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1971, Ser. No. 127,926
Int. Cl. H01l 7/36; C01b 31/36; C23c 11/00
U.S. Cl. 148—175 11 Claims



Single crystal thin films of Group III(a)–V(a) compounds grown by the molecular beam epitaxy method are doped during growth with germanium. Generally, the Group IV dopants such as tin and silicon produce n-type crystals. However, germanium produces either n-type or p-type crystals depending on whether the growth surface structure is stabilized in the Group V(a) element or the Group III(a) elements, respectively, which in turn depends on both the substrate temperature and the ratio of the Group V(a) element to Group III(a) elements in the molecular beam.

3,751,311
GELATION OF HYDRAZINE AND HYDRAZINE-TYPE ROCKET FUELS

Eugene M. Vander Wall, Citrus Heights, and James M. Lucas, El Dorado Hills, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed July 27, 1967, Ser. No. 658,982
Int. Cl. C06c 1/02
U.S. Cl. 149—36 7 Claims

This patent describes novel gelled hydrazine-type fuels suitable for use in rockets, missiles and the like. The gelling agents are quaternary ammonium slats of polyacrylic acid.

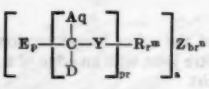
3,751,312

FLUORINATED OXIDANT COMPOUNDS CONTAINING A FLUORAMINO GROUP

Charles D. Wright, White Bear Lake; Joseph La Mar Zollinger, Woodbury Township, Washington County; Ronald A. Mitsch, Falcon Heights, and Douglas H. Dybvig, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 29, 1963, Ser. No. 286,881
Int. Cl. C06b 15/00; C07c 87/22
U.S. Cl. 149—109 18 Claims

1. A compound of the formula:



wherein the expression inside the outer brackets represents a first ion and Z represents a second ion of opposite charge from the first ion, and

A is selected from the class consisting of fluorine and difluoramino groups,

E is selected from the class consisting of fluorine, difluoramino, perfluoroalkyl, difluoramino-substituted perfluoroalkyl, difluoramino-substituted perfluoroalkyl-fluoramino and

groups,

D is selected from the class consisting of $-NF_2$, —NFH and =NF,

Y is selected from the class consisting of —O—, —N=CH—, —O—N=CH—,

and —NX—,

X is selected from the class consisting of hydrogen and alkyl groups containing not more than six carbon atoms,

R is selected from the class consisting of mono-, di- and tri-covalent ionic charge bearing groups,

a and *b* each have values from 1 to 3,

m and *n* are the ionic charges of the individual first and second ions and have integer values from −3 to +3,

p is the covalence of R,

r is the covalence of E and

q is 0–1;

provided that *ma* equals $-nb$,

that when *r* is 2, *p* is 1 and

that when D is =NF, *q* is 0.

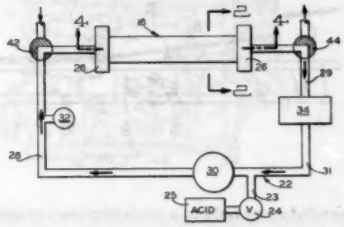
3,751,313

METHOD OF FORMING RIFLING IN A GUN BARREL BY CHEMICAL MILLING

Josepe D. Di Benedetto, Moline, Ill., and Walter M. Kisner, Davenport, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 23, 1971, Ser. No. 173,996
Int. Cl. C23g 3/04
U.S. Cl. 156—16 4 Claims

A method of forming rifling, including that of a gain twist configuration, by the chemical milling process in the bore of a barrel which may include a liner of a refractory material. A template rod made of an acid resistant material which is radially compressible and which has a diameter slightly greater than that of the bore is pressed thereinto so that liquid tight contact is made between the surfaces of the rod and bore. A plurality of spiral channels and uninterrupted areas are formed in the rod to image the desired rifling configuration. A



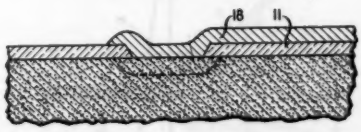
closed circulatory system delivers fluid acid to one end of the channels, and the rifling grooves formed thereby, and after passing therethrough returns the acid to the pump for recirculation. A pressure gage between the pump and barrel may be used in lieu of an elapsed time for chemical reaction to indicate when the rifling grooves are formed to the desired depth.

3,751,314

SILICON SEMICONDUCTOR DEVICE PROCESSING

Lillian Ann Rankel, Piscataway, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1971, Ser. No. 158,787
Int. Cl. H01l 7/50, 7/44
U.S. Cl. 156—17 5 Claims



Silicon semiconductor devices containing boron doped regions are produced using borosilicate glass as a doping source and silica glass as a masking layer. After the device is heated to produce boron diffusion into the silicon surface, a preferential etchant is used to remove the borosilicate glass while leaving the masking layer substantially in place for use in subsequent processing steps. The etchant is an aqueous solution of HF and HNO_3.

3,751,315

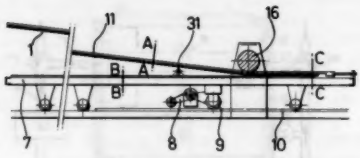
METHOD FOR THE MANUFACTURE OF THERMALLY INSULATED SANDWICH TYPE BUILDING

Javier Vidal Sario, Pamplona (Navarra), Spain, assignor to Perfil En Frio, S.A., Pamplona, Spain

Filed Mar. 31, 1970, Ser. No. 24,128
Claims priority, application Spain, Feb. 28, 1970, 377,036
Int. Cl. B32b 31/06, 31/12
U.S. Cl. 156—71 5 Claims

Apparatus for discontinuously manufacturing a thermally insulated sandwich type building panel and method of fabricating it. The composite panel has two outer pre-formed planar shells with marginal transverse flanges having a small part thereof returned generally to define a further marginal

co-planar flange on each which is generally parallel to the main plane of the basic planar shells. The two shells preferably have their inner surfaces pretreated to give a better bond with the plastic, and are supported in a manner with the open cavities and marginal co-planar flanges in face to face relation by one being moved into superposed relation to the other by suitable support and conveying apparatus. The supports to reenforcingly hold the shells are such as to permit the shells to



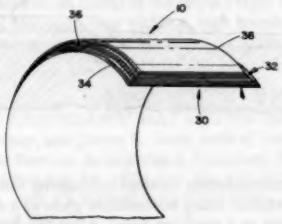
be expanded apart only to a predetermined extent responsive to a previously introduced reactive plastic material into the lower shell, which plastic expands when subjected to heat. Accordingly, a unitary building panel is evolved which embodies a thermal and accoustical core or nucleus which also thermally separates the metallic exterior panels from one another to ultimately provide a building having improved thermal resistant and accoustical characteristics.

3,751,316

METHOD OF MAKING BREAKER BANDS FOR PNEUMATIC TIRES

Richard M. Menough, and Robert W. Cuddigan, both of Denver, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Jan. 28, 1971, Ser. No. 110,688
Int. Cl. B29h *17/28, 17/30*
U.S. Cl. 156—127 **9 Claims**



An improved method of making breaker bands for pneumatic tires which includes spiraling successive sheets of rubberized tire cord fabric or material over a building drum to form a sleeve of desired diameter and circumferentially cutting the sleeve into breaker bands of desired width.

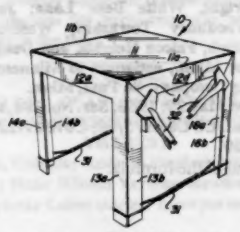
3,751,317

METHOD OF FORMING A TABLE FROM A SINGLE BLANK OF HEAT-BENDABLE SHEET MATERIAL

James V. Galloway, 190 Sheridan Rd., Winnetka, Ill.

Filed May 17, 1971, Ser. No. 143,824
Int. Cl. A47b *13/00;* **B29d** *27/10*
U.S. Cl. 156—196 **3 Claims**

A table construction is provided which is formed from a single substantially H-shaped blank of thermoplastic material. The table includes a multi-cornered top delimited by a depending skirt and a plurality of depending legs disposed at predetermined corners of said top. Each leg is provided with a pair of elongated angularly disposed flange sections, one of said flange sections being integral with a segment of the de-



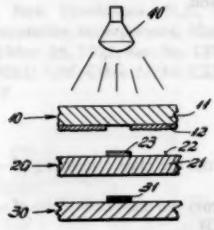
pending skirt and the other flange section being secured to and forming a mitre joint with an edge of a second segment of the depending skirt.

3,751,318

THERMOGRAPHIC TRANSFER PROCESS

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,132
Int. Cl. B32b *31/26;* **B41m** *5/26*
U.S. Cl. 156—234 **5 Claims**



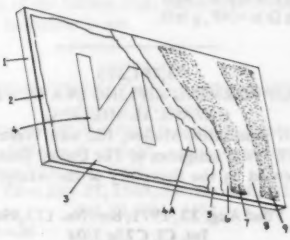
Thermographic transfer duplication process employing novel thermographic transfer sheets having a heat-transferable layer comprising discrete particles which are capable of softening and adhering to a copy sheet at thermographic temperatures.

3,751,319

METHOD FOR MAKING SIGNS AND OTHER ARTISTIC WORKS

Patrick Hart Green, Willowdale, and George Wilbert Foster, Streetsville, both of Ontario, Canada, assignors to Mond International Limited, Pembroke, Bermuda

Filed Mar. 8, 1971, Ser. No. 121,993
Claims priority, application Canada, June 2, 1970, 26647
Int. Cl. B29c *21/00;* **G09f** *7/00*
U.S. Cl. 156—242 **9 Claims**



Signs and other artwork are made with a clear facing layer of polyester resin protecting one or more coloured pattern

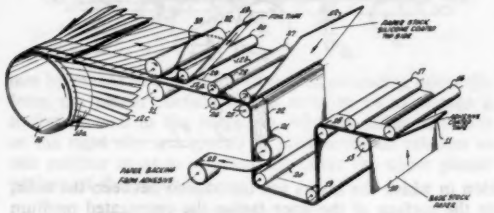
layers. The pattern layers are applied by silk screening after the facing layer has cured to at least a tack free condition. At the rear is applied a background layer of polyester resin and a stiff glass fibre backing layer.

3,751,320

COMPOSITE PRESSURE SENSITIVE ADHESIVE SHEET STRUCTURE AND PROCESS OF MAKING THE SAME

Homer G. Buck, 803 S. Rimpau Ave., Los Angeles, Calif.

Division of Ser. No. 36,209, May 11, 1970, Pat. No. 3,663,343.
This application Feb. 11, 1972, Ser. No. 225,668
Int. Cl. B32b *31/00*
U.S. Cl. 156—268 **5 Claims**



A process in which a carrier strip has a release coated web marginally secured thereto, the latter releaseably adherently mounting a longitudinally extending tape having a pressure sensitive adhesive on its underside. The release coated strip is longitudinally severed with the line of severance being spanned by the adhesive coated tape. Subsequently, the combined span of the tape and a marginal portion of the release coated stock that is freely superposed on the carrier strip, are transversely slit defining a plurality of discrete pressure sensitive adhesive backed sections of tape, each provided with a corresponding tab by means of which each discrete section of tape can be peeled from the composite structure for application to another article. The process produces a roll of individually dispensible, pressure sensitive adhesive tape sections, each with its corresponding tab being so angularly related to the length of the composite structure as to facilitate winding up of the product, in the process of manufacture, to protectively enclose the tabs between successive coils of the carrier strip. Upon unwinding of the roll through a specially adapted guide means of a dispensing apparatus, each tab is individually projected out of the plane of the carrier strip to provide clearance for grasping a free end of the tab stripping the associated adhesive backed sheet article from the roll. The carrier strip and tape may have different characteristics of light reflectivity, controlling an automatic feed system for the dispensing apparatus, cooperatively associated with a photoelectric light cell or the like.

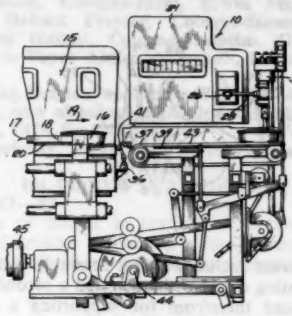
3,751,321

AUTOMATIC LABELING MACHINE WITH "NO LABEL" AUTOMATIC STOP

Gilbert M. Hagemann, Franksville, and William F. Stremke, Jr., Racine, Wis., assignors to Reliance Electric Company, Toledo, Ohio

Filed Apr. 26, 1971, Ser. No. 137,407
Int. Cl. B32b *31/00*; B65c *9/08*
U.S. Cl. 156—352 **6 Claims**

A device for interrupting movement of packages and stopping operation of an automatic labeling machine includes a vacuum sensing switch in communication with the vacuum actuated label carrying nozzle which carries printed labels in the course of their transfer from the label printer toward the package. The vacuum sensing switch is electrically connected to a circuit which is coupled to the motor which actuates a package conveyor to advance the packages to a label applying station. If because of some malfunctions of the label supply or printer, etc., a label is not present on the label transfer nozzle,



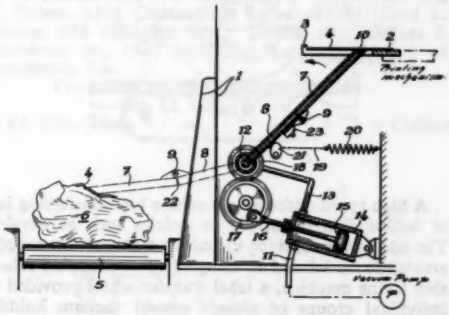
and its suction port is thus exposed to atmosphere, instead of being closed off by the label, the machine motor is deenergized.

3,751,322

LABEL TRANSPORTING DEVICE FOR A PRICE CALCULATING SCALE

Hans-Dieter Schulz, Breitscheid, Germany, assignor to Espera-Werke Aktiengesellschaft, Duisburg, Germany

Filed June 23, 1971, Ser. No. 155,860
Claims priority, application Germany, June 24, 1970, P 20 31 193.7
Int. Cl. F16p *3/12*; G01g *13/00*
U.S. Cl. 156—360 **7 Claims**



A label transporting device for use in connection with calculating scales, according to which pivotable suction pipe means is pivotable into a label receiving position for picking up a label and then is shifted into a label applying position for applying the picked up label to weighed goods, said suction pipe means being vented when said suction pipe means has applied the label to the goods to release said label.

3,751,323

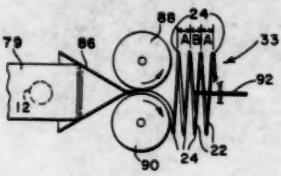
APPARATUS FOR PRODUCING A CONTOURED NECK TOWEL

Samuel H. Cowen, Southfield, Mich., assignor to Chemed Corporation, Cincinnati, Ohio

Original application Jan. 29, 1970, Ser. No. 6,782, now Patent No. 3,619,816. Divided and this application June 9, 1971, Ser. No. 151,420
Int. Cl. B31b *1/00*
U.S. Cl. 156—463 **3 Claims**

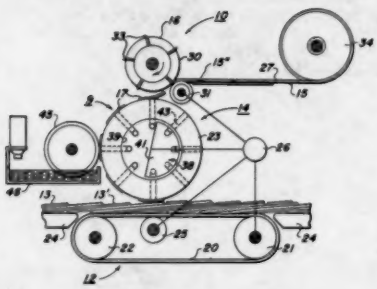
A contoured neck towel is disclosed which is formed of a thin, flexible laminate having a layer of absorbent

paper and a layer of liquid-impervious plastic material. A method is disclosed for consecutively forming a multiplicity of contoured neck towels, each of which includes a readily removable generally semicircular section. The



apparatus hereof includes a first rotatable cylinder having a perforating member thereon and a second rotatable cylinder spaced therefrom for supporting a laminated sheet portion to be perforated.

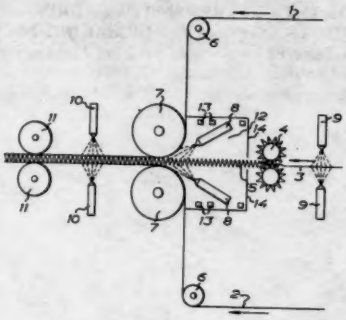
3,751,324
HIGH SPEED LABELING SYSTEM
Albert G. Enskat, Barrington, Ill., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 16, 1970, Ser. No. 98,780
Int. Cl. B32b *31/00*
U.S. Cl. 156—521 **1 Claim**



A high speed addressing machine for transferring labels or information therefrom to articles such as envelopes. The addressing machine includes a transport for supplying articles to be labeled in shingled or overlapping relationship to the machine, a label transfer wheel provided with individual groups of closely spaced vacuum holddown ports to enable a succession of closely spaced labels to be supported by the transfer wheel and carried by the transfer wheel to the articles, and a high speed cutter for separating labels from an uncut label supply into individual labels for use by the transfer wheel. As an alternate arrangement, the transfer wheel may be provided with vacuum port groups staggered along the transfer wheel periphery to accommodate a multi-row label supply.

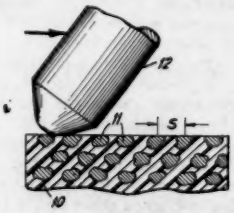
3,751,325
APPARATUS FOR THE MANUFACTURE OF CORRUGATED BOARD
Ake Evald Edkvist, 3 Rosenvagen, Staffanstorp, Sweden
Filed Aug. 28, 1970, Ser. No. 67,770
Int. Cl. B31f *1/22*; B32b *31/04*
U.S. Cl. 156—550 **2 Claims**

A method and an apparatus for the manufacture of corrugated board from at least one liner and one corrugated medium comprises joining the layers together as they run between rolls which rotate about their longitudinal axes. To permit a high speed of manufacture and to ensure very low consumption of material serving adhesively to bond the layers of the corrugated board together, use is made of a molten material which is solid at room temperature, said molten material being applied ahead of the layer joining rolls, as viewed in the direc-



tion in which the layers are introduced between the rolls, to the surface of the liner facing the corrugated medium and/or to the surface of the corrugated medium facing the liner.

3,751,326
HARD TRANSPARENT SHEET-LIKE MATERIAL OR COATING
Alvin M. Marks, 166—35 9th Ave., Whitestone, N.Y. 11357
Continuation of abandoned application Ser. No. 672,903, Oct. 4, 1967. This application July 14, 1971, Ser. No. 162,694
Int. Cl. B32b *19/02*
U.S. Cl. 161—5 **22 Claims**

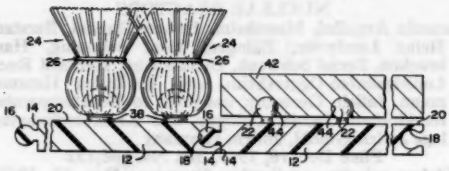


A composition of matter is disclosed for producing a hard sheet or coating of composite material comprising a matrix of plastic material having dispersed therethrough finely divided hard particles having a hardness of at least 5, for example, preferably about 9.5, on the Moh's scale. The hard particles may be controlled at a size such that light may be transmitted through the sheet with little or no apparent light scatter. Where transparency is not a criterion, the average particle size may range broadly over the range of about 0.001 to 10 microns.

3,751,327
MODULAR CARPET SYSTEM
Douglas L. Hausler, 520 De Narvaez Drive, Sarasota, Fla. 33577
Filed Aug. 19, 1971, Ser. No. 173,001
Int. Cl. B32b *3/14, 7/06*
U.S. Cl. 161—40 **10 Claims**

A modular floor covering system comprising a plurality of base mats removably connected together by means of a plurality of alternately and successively arranged indentations and projections formed along the outer peripheral

edge of each mat and correspondingly configured such that the projection of one mat is removably mounted within the indentations of an adjacently positioned and connected mat. Surfacing, either in the form of substantially flexible or resilient tufts or substantially rigid tile members are secured to the upper planar surface of the



mat by means of a plurality of fingers extending upwardly from the planar surface of the mats so as to engage a socket located in the surfacing, wherein either the tufts or the rigid tiles are spaced in predetermined relation to one another so as to substantially cover the upper planar surface of the base mats.

3,751,328

CORRUGATED POLYETHYLENE TEREPHTHALATE FILM AND PREPARATION THEREOF

Walter L. Roberts, Hickory, and Paul F. Burch, Conover, N.C., assignors to Superior Cable Corporation, Hickory, N.C.

No Drawing. Filed Oct. 13, 1965, Ser. No. 495,718
Int. Cl. B31f *1/20*; B32b *3/28*
U.S. Cl. 161—133 **8 Claims**

Corrugated polyethylene terephthalate film is provided having a coefficient of friction of less than about 0.40. Before corrugation, the film may be biaxially oriented and heat set at a temperature of 180° to 220 C. and with the thickness being less than about 10 mils, preferably 1–3 mils. The corrugation can be accomplished by shaping at 100° to 175° C. (preferably, 120° to 140° C.) between coacting roating surfaces, preferably maintained at the same temperature. The coefficient of friction is preferably reduced to below 0.35.

3,751,329

POROMERIC MATERIALS

Giorgio Fonzi, Saronno, Teo Paleologo, Milan, and Giorgio Toso, Gallarate, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed June 30, 1971, Ser. No. 158,609
Claims priority, application Italy, July 1, 1970, 26,848/70
Int. Cl. B32b *3/26*
U.S. Cl. 161—159 **8 Claims**

Poromeric materials, particularly leather substitutes, have a non-woven backing and a microporous polyurethane film facing, the intermediate layer being a foam coagulated from a dispersion containing more than 45% resin by weight and air in a volumetric ratio dispersion to air of 1:2 to 2:1.

3,751,330

RAILROAD BRAKE SHOES

Richard H. Gilbert, Bergen, N.J., assignor to Abex Corporation, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 123,994
Int. Cl. F16d *69/02*
U.S. Cl. 161—165 **1 Claim**

The tendency of a railroad brake shoe of the composition shoe type, as distinguished from the cast metal type, to fracture and separate from its backing is diminished by interposing between the shoe and the back an intermediate support layer characterized by a strip of rubber containing reinforcing cords.

3,751,331

ADHERING TEXTILES AND METALS TO RUBBER AND PRODUCT

Ivo Dane, Leverkusen, Guido Fromandi, Schildgen, Paul Blankenstein, Cologne-Riehl, Erwin Muller, Leverkusen, Helmut Freytag, Cologne-Stammheim, and Wolfgang Huther, Cologne-Mulheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 19, 1966, Ser. No. 580,205, now abandoned. Divided and this application May 25, 1970, Ser. No. 40,370
Claims priority, application Germany, Oct. 2, 1965, F 47,344
Int. Cl. B32b *5/02, 5/16, 15/06*
U.S. Cl. 161—83 **13 Claims**

Bonding of rubber to textiles or metals utilizing a vulcanizable rubber containing a formaldehyde donor, a formaldehyde acceptor and a finely dispersed silica filler.

3,751,332

BICOMPONENT SELF-CRIMPING MODACRYLIC TEXTILE FIBER

Fred F. Chen, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,514
Int. Cl. D02g *1/00*
U.S. Cl. 161—176 **7 Claims**

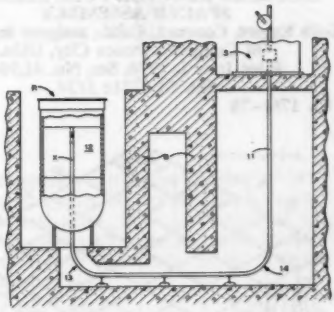
Bicomponent textile fibers comprising mixtures of an acrylonitrile-vinylidene chloride copolymer, a poly(N-isopropyl acrylamide) homopolymer, and a cellulose ester. These fibers are characterized by their self-crimping properties.

3,751,333

NUCLEAR REACTOR CORE MONITORING SYSTEM

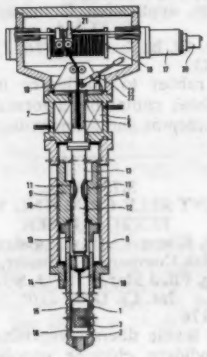
Carl N. Drummond, 731 Custer Drive 24502; Richard T. Bybee, 1212 Cedar Hills Drive 24502; Fred L. Mason, 524 Oakridge Blvd. 24502; and Herbert J. Worsham, Jr., 1909 McGuffey Lane 24503, all of Lynchburg, Va.

Filed June 11, 1970, Ser. No. 45,468
Int. Cl. G21c *17/10*
U.S. Cl. 176—19 R **8 Claims**



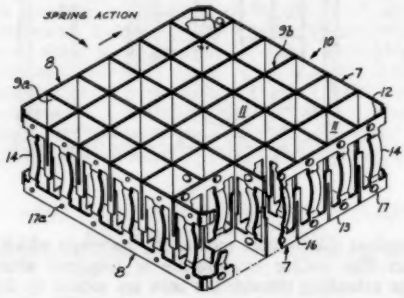
A nuclear reactor core monitoring system in which the neutron flux and/or temperature at locations along a passage extending through the core are sensed by detectors in an elongated instrumentation assembly inserted into the passage from a handling station outside the core region. The instrumentation assembly is laterally flexible so that it can negotiate bends in the passage. A hollow tube is included in the assembly for insertion therein of a standard neutron detector for periodically calibrating the other detectors.

3,751,334
METHOD OF AND APPARATUS FOR CONTROLLING A NUCLEAR REACTOR
Walter Sturmer, Mannheim, and Hubert Handel, Burstadt, Germany, assignors to Brown Boveri/Krupp Reaktorbau GmbH, Cologne, Germany
Filed July 7, 1971, Ser. No. 160,468
Claims priority, application Germany, Apr. 23, 1971, P 21 19 895.8
Int. Cl. G21c 7/12
U.S. Cl. 176—36 R 10 Claims



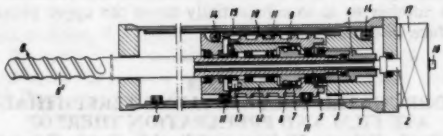
For the control and shut-down of the fission reaction in a pebble bed nuclear reactor where ball-shaped operating elements including fuel elements are arranged in a pile, a tubular casing is arranged to be rotated as it moves axially through the pile, and an absorber element is positioned within the casing. A cable is attached to the absorber element and to a winch or similar device for selectively positioning the absorber element within the casing. The exterior surface of the casing is shaped so that it passes through the pile without causing undue stress in the ball-shaped elements.

3,751,335
NUCLEAR REACTOR FUEL ELEMENT SPACER ASSEMBLY
W. Keith Eggert, Concord, Calif., assignor to Continental Oil Company, Ponca City, Okla.
Filed June 1, 1970, Ser. No. 41,966
Int. Cl. G21c 3/34
U.S. Cl. 176—78 5 Claims



A nuclear reactor fuel element spacer arrangement has a fuel element supporting and spacing means in the form of individual cells through which respective fuel rods extend. The cells have a number of sides, some of which are provided with leaf spring members protruding into the cell and others of which are provided with knobs such that the fuel rod in each cell is resiliently gripped between the springs and the knobs in a manner to restrict lateral motion of the fuel rods.

3,751,336
CONTROL DEVICE FOR PEBBLE-BED NUCLEAR REACTORS
Antonio Angelini, Mannheim, Hubert Handel, Burstadt, Heinz Landwehr, Edingen, Josef Schoning, Hambrucken, Bernd Schwenk, Heddesheim, Gerhard Ruck, Ludwigshafen-Oggersheim, and Karlheinz Hammelmann, Julich, Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, and Kernforschungsanlage Julich GmbH, Julich, Germany
Filed Dec. 18, 1969, Ser. No. 886,152
Claims priority, application Germany, Dec. 20, 1968, P 18 15 916.5; Sept. 13, 1969, P 19 46 540.8
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. G21c 7/10
U.S. Cl. 176—36 R 2 Claims



A control device for regulating a pebble-bed nuclear reactor including an absorber rod movable longitudinally to displace reactor core elements, said rod having at least one helical groove formed on the exterior of that part of the rod which penetrates the core. Drive means are provided whereby both longitudinal and rotary movements may be imparted to the rod, the movements being such as to act in conjunction with the sense of the helical groove so to facilitate insertion and/or withdrawal of the rod by assisting the displacement of core elements.

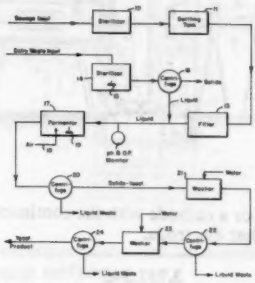
3,751,337
PROCESS FOR PRODUCING CELLS OF MICROORGANISMS
Katsunobu Tanaka, Kazuo Kimura, and Masaki Yamamoto, Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of abandoned application Ser. No. 803,420, Feb. 28, 1969. This application Nov. 1, 1971, Ser. No. 194,483
Int. Cl. C12b 1/00
U.S. Cl. 195—28 R 9 Claims

The present disclosure is directed to a process for producing microorganism cells using microorganisms having a gaseous hydrocarbon-assimilating property and belonging to the genera Nocardia, Corynebacterium and Brevibacterium which comprises culturing said microorganisms in an aqueous nutrient medium, under aerobic conditions in the presence of at least one gaseous hydrocarbon as the main carbon source, and isolating and recovering the resultant microorganism cells thus produced. The gaseous hydrocarbons include ethane, propane and butane.

3,751,338
PROCESS FOR PRODUCING YEAST
Kenneth Barton Farris, 1057 Morewood Ave., Pittsburgh, Pa. 15213
Filed May 3, 1971, Ser. No. 139,736
Int. Cl. C12c 11/00
U.S. Cl. 195—82 2 Claims

The specification discloses a process for the production of yeast utilizing as a growth medium for yeast organisms,

a non-chlorinated, sterilized and filtered sewage effluent, in which the pH is in the range 5.0 to 8.0 and the osmotic pressure is in the range .05 M to 1.5 M NaCl. Fermentation of yeast species *Saccharomyces cerevislae* and *Candida utilis* individually or in combination, and of yeast species *Endomycopsis fibuliger* in combination with either



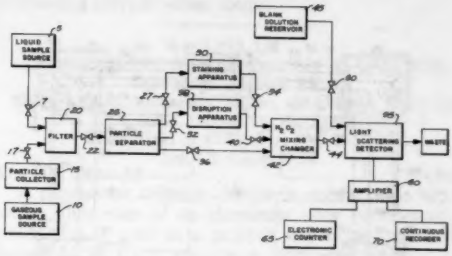
one or both of the aforesaid species is conducted under aerobic conditions at a temperature in the range of 20° to 35° C. for a period of from 12 to 30 hours. Centrifugation of the fermented liquid separates out the solid yeast particles from liquid waste. Repetitive washing and centrifugation provides for purification of the final end product.

3,751,339
PROCESS FOR PREPARING CHLORAMPHENICOL ANALOGUES
Takeo Suzuki and Haruo Honda, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
No Drawing. Filed Apr. 26, 1971, Ser. No. 137,695
Claims priority, application Japan, Apr. 28, 1970, 45/35,902
Int. Cl. C12d *13/00*
U.S. Cl. 195—96 **9 Claims**

The present invention relates to a process for preparing analogues of chloramphenicol, characterized by culturing a microorganism capable of producing D-threo-2-propionamido-1-p-nitrophenyl-1,3 - propanediol (hereinafter designated as Substance A) and/or D-threo-2-isobutyramido-1-p-nitrophenyl-1,3-propanediol (hereinafter designated as Substance B), under aerobic conditions in a culture medium containing assimilable carbon sources to form and accumulate said analogues of chloramphenicol therein and isolating and recovering the same therefrom.

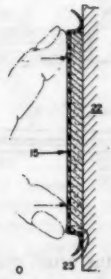
3,751,340
METHOD FOR DETECTING THE PRESENCE AND CONCENTRATION OF HEME-CONTAINING PARTICLES AND HEAVY METAL IONS IN FLUID MEDIA
Samuel Witz, Los Angeles, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed May 6, 1971, Ser. No. 140,685
Int. Cl. C12k *1/00*
U.S. Cl. 195—103.5 R **3 Claims**

Disclosed is a method and apparatus for detecting, in fluid media, the presence and concentration of heme-containing particles, such as microorganisms, and heavy metal ions. The detection is accomplished by observing the light scattered by bubbles of oxygen formed by the catalytic decomposition of hydrogen peroxide by the ions or by the heme found in the particles. Microorganisms not naturally possessing heme may be detected by this method by preliminarily staining them with the enzyme catalase. The scattered light is detected by a photocell,



the frequency and amplitude of whose output is a function of the concentration of the contaminant.

3,751,341
RECEPTACLE HAVING A DISTENDABLE SIDEWALL
Lamont J. Seitz, Huntington Beach, and Robert W. Bruen, South Laguna, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed May 25, 1971, Ser. No. 146,730
Int. Cl. C12k *1/00*
U.S. Cl. 195—139 **10 Claims**

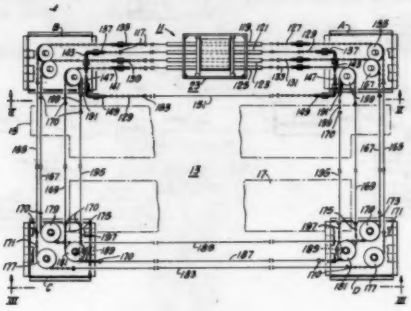


A round receptacle is disclosed having a distendable sidewall wherein a gelled culture medium is located in the bottom of the receptacle. The receptacle is an improved sterility tester and/or microorganism detector for surfaces, and more particularly for direct contact with surfaces which are relatively flat.

3,751,342
REVERSING MECHANISM FOR COKE OVEN BATTERY
Ward F. Gidick, West Newton, Pa., assignor to Koppers Company, Inc.
Filed Dec. 30, 1970, Ser. No. 102,853
Int. Cl. C10b *5/12, 21/10*; F16k *11/00*
U.S. Cl. 202—141 **13 Claims**

A reversing mechanism for a coke oven battery includes a movable reversing plate, a locking plate, and a plurality of bars coacting with the reversing plate and connecting to actuator rods which are connected to the fuel and air valves

of the coke oven battery. A fluid actuated cylinder moves the reversing plate to reverse the heating cycle, and a fluid



actuated cylinder moves the locking plate to change the type of fuel burned in the heating flues.

3,751,343

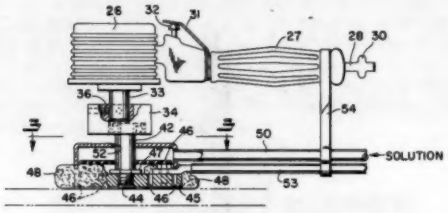
BRUSH ELECTROPLATING METAL AT INCREASED RATES OF DEPOSITION

Andrew J. Macula, 6051 Fry Road, Brookpart, Ohio 44142; John T. Macula, 1013 Kenilworth 44113; and Benno A. Schwartz, Jr., 3278 W. 157th St. 44111, both of Cleveland, Ohio

Filed June 14, 1971, Ser. No. 152,802

Int. Cl. B01k *3/00;* **C23b** *5/48, 5/76*

U.S. Cl. 204—15 **16 Claims**



An improvement in the brush electroplating of metal in which appreciably increased rates of metal deposition are realized as compared to deposition rates previously obtained. In one form, the present brush apparatus includes a tool having an anode and a porous dielectric cover on the anode adapted to be wet by electrolyte and moved over a workpiece. During electroplating of metal, rapid relative movement takes place between the cover and the anode and preferably between the cover and both the anode and the cathode workpiece.

3,751,344

METHOD OF CARRYING OUT CONTINUOUS THICK CHROME PLATING OF BARS

Sergio Angelini, Via M. F. Quintiliano 15, Milan, Italy

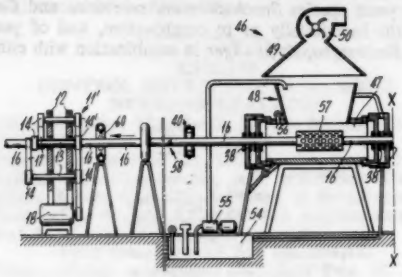
Filed Nov. 13, 1970, Ser. No. 89,428

Claims priority, application Italy, Nov. 15, 1969, 24,464/69

Int. Cl. B01k *3/00;* **C23b** *5/56, 5/58*

U.S. Cl. 204—28 **7 Claims**

Method and apparatus are provided for the continuous thick chrome plating of bar, wire, or tube, both externally and internally, which provides providing a continuous series of said bars, wires, or tubes, passing said continuous assembly through pretreatment areas, chrome plating areas and post-treatment areas and providing in the coating area



either an anode or a cathode with the continuous assembly acting as the other electrode.

3,751,345

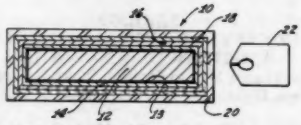
METHOD OF PRODUCING A MAGNETIC STORAGE MEDIUM

George E. Wilhelm and Stanley S. Nagy, Studio City, and Moon T. Hahn, Santa Monica, Calif., assignors to Sperry Rand Corporation

Original application Mar. 10, 1969, Ser. No. 805,573, now Patent No. 3,595,630. Divided and this application July 9, 1971, Ser. No. 161,328

Int. Cl. C23f *5/50, 5/52, 17/00*

U.S. Cl. 204—29 **15 Claims**



A magnetizable storage member is formed from a substrate and thin layers deposited on the substrate. The thin layers include an element having properties of initially being non-magnetic and of becoming magnetizable when subjected to heat at a particular elevated temperature. A thin chemically inert layer is disposed between the thin magnetizable layers. The magnetizable layers may be nickel and the chemically inert layer may be gold. The magnetizable storage member is provided with magnetic properties corresponding to those provided by a storage member having iron oxide layers. A hard, thin, non-magnetic protective coating may be disposed on the storage member and may be made from a silicone.

The storage member is formed from the different layers discussed above and is then baked at the particular elevated temperatures to make the storage member magnetizable.

3,751,346

COMBINED PLATING AND HONING METHOD AND APPARATUS

Myron P. Ellis, Royal Oak, and Richard J. Gavasso, Detroit, Mich., assignors to Micromatic Industries, Inc., Detroit, Mich.

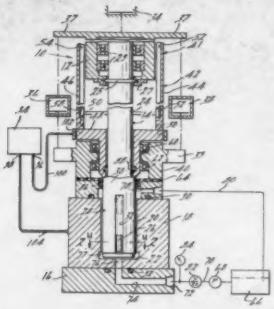
Filed Aug. 16, 1971, Ser. No. 172,120

Int. Cl. B23p *1/00, 1/02;* **C23b** *5/56*

U.S. Cl. 204—26 **6 Claims**

A combined plating and honing method and apparatus utilizing and incorporating a rotatable sleeve type anode and a plurality of honing stones mounted for coaxial rotation with and reciprocation relative to the sleeve type anode, the anode being rotatable relative to a cathodic

work surface to effect plating thereon and the honing stones being movable into engagement with the plated surface to simultaneously and/or sequentially mechanically hone such surface.



3,751,347

REDUCTION AND CONTROL OF TRIVALENT CHROMIUM IN HEXAVALENT CHROMIUM PROCESSING SOLUTIONS

John Kraljic, North Syracuse, N.Y., Winslow H. Hartford, Charlotte, N.C., and Millard F. Good, Liverpool, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,307
Int. Cl. C23b *5/06*; C01g *21/00, 37/14*
U.S. Cl. 204—51 **9 Claims**

A process for reducing the quantity of trivalent chromium in hexavalent chromium processing solutions, which involves agitating a solution containing the trivalent chromium with lead dioxide at a temperature of at least 40° C. and separating the resulting insoluble lead compounds from the solution.

3,751,348

ALKALINE BRIGHT ZINC ELECTROPLATING

Paul J. Szilagyi, Maple Heights, Ohio, assignor to Enthone, Incorporated, New Haven, Conn.

No Drawing. Filed June 14, 1971, Ser. No. 153,049
Int. Cl. C23b *5/10*
U.S. Cl. 204—55 Y **23 Claims**

Bright zinc is electrodeposited from alkaline noncyanide or cyanide zinc electrodepositing baths comprising an alkaline solution containing a source of zinc ions and an effective amount, as a brightening agent, of a bath-soluble reaction product obtained by the reaction of melamine with formaldehyde, an acyclic amine having two or more functional groups and an epihalohydrin or a glycerol chlorohydrin. The melamine-formaldehyde-acyclic amine-epihalohydrin reaction product or melamine-formaldehyde-acyclic amine-glycerol chlorohydrin reaction product is usually utilized as brightener in the alkaline zinc baths in combination with an aromatic aldehyde as an additional brightening agent.

3,751,349

METHOD FOR ELECTROLYTICALLY FORMING A COATING OF TITANIUM-ALKALINE EARTH METAL COMPOUND OXIDE

Hiroshi Nozaki, Chiba, and Masaki Yamazaki, Ueda, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1971, Ser. No. 127,648
Claims priority, application Japan, Mar. 27, 1970, 45/25,270
Int. Cl. C23b *11/02*
U.S. Cl. 204—56 R **4 Claims**

A method for forming a coating of titanium-alkaline earth metal compound oxide on the surface of titanium used as one of the electrodes in an electrolysis, in which said electrolysis is carried out in a bath containing hydroxides or salts of alkaline earth metals and employing alternating current power source.

3,751,350

PROCESS FOR COLORING AN ALUMINUM ANODIC OXIDE FILM

Shigeru Ueki, Kasukabe, Japan, assignor to Kabushiki Kaisha Aiden, Tokyo, Japan

Filed Mar. 3, 1972, Ser. No. 231,529
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **5 Claims**

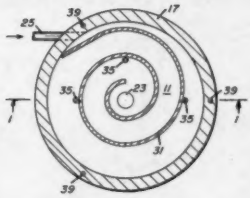
A process for coloring aluminum anodic oxide films in which aluminum or an aluminum alloy with an anodic oxide film is used as a cathode and is alternately subjected, in an acidic electrolyte containing metallic salts, to a direct current electrolysis from 0.2 a./dm.^{2} to 2 a./dm.^{2} and an alternating current electrolysis from about 1 v. to about 5 v.

3,751,351

ELECTROLYTIC CELL FOR RECOVERING METAL FROM A SOLUTION CONTAINING IONS THEREOF, AND METHOD FOR OPERATING SAME

John S. Zankowski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,196
Int. Cl. C22d *1/02*; C23b *5/26*
U.S. Cl. 204—109 **11 Claims**



An electrolytic cell comprises spaced parallel flat anode and cathode, an annular wall of dielectric material between the two and forming an internal chamber, a spiral partition of dielectric material in the chamber, an inlet for electrolyte solution adjacent one end of the spiral, and an outlet for electrolyte solution adjacent the opposite extremity of the spiral. The spiral partition can be self supporting, or supported by posts which add to turbulence. In a preferred modification two of such cells are provided having the cathode as a common wall. In one cell the inlet is at the outer end of the spiral and the outlet is at the inner end and through the center of the cathode, thus forming the inlet of the second cell, with the outlet from the second cell being at the outer end of the spiral.

3,751,352

METHOD OF DEOXIDIZING STAINLESS STEEL AND ELECTROPOLISHING OF MOLYBDENUM

George R. Blair, Culver City, and Sherman R. Keller, Valinda, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Application June 22, 1970, Ser. No. 48,551, which is a continuation-in-part of abandoned application Ser. No. 721,153, Apr. 15, 1968. Divided and this application Mar. 2, 1972, Ser. No. 282,197
Int. Cl. C23b *3/00*
U.S. Cl. 204—145 R **4 Claims**

A method of electropolishing workpieces as molybdenum electrodes and grids and removal of oxidation on

stainless steel, with a current density on the order of 0.9 to 5 amperes per sq. inch in a voltage range in the order of 15 to 90 volts, using an anhydrous acetic acid based bath containing about 10 percent sulfuric acid. The process is relatively free of various hazards common to the electropolishing of metals, e.g. high cell voltage, excessive metal loss and dangerous electrolyte compositions.

3,751,353

PROCESS FOR THE MANUFACTURE OF 2-CHLORETHANEPHOSPHONIC ACID DICHLORIDE

Hans-Jerg Kleiner, Bad Soden, Taunus, and Sigurd Rosinger, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 26, 1971, Ser. No. 128,536
Claims priority, application Germany, Jan. 19, 1971, P 21 02 264.0
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 HE **8 Claims**

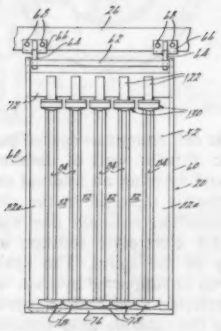
Preparation of 2-chlorethanephosphonic acid dichloride by the reaction of ethanephosphonic acid dichloride with a chlorinating agent in the presence of high-energy rays.

3,751,354

ELECTROPLATING CELL INCLUDING MAGNETIC MEANS TO COUPLE CONCAVE WORKPIECES TO A PLATING RACK

Hugh F. Jones, Ann Arbor, Mich., assignor to Federal-Mogul Corporation

Filed Sept. 27, 1971, Ser. No. 183,754
Int. Cl. B65g *49/00*
U.S. Cl. 204—198 **9 Claims**



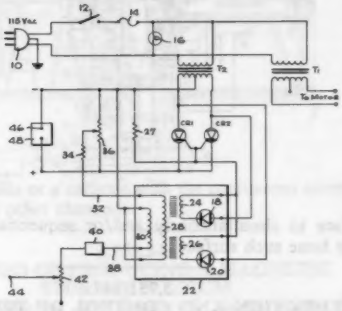
An apparatus and process for electroplating the arcuate concave surfaces of workpieces, such as precision shell-type half bearings, employing a cell adapted to be immersed in an electrolyte and a work rack including a panel on which one or a plurality of semicylindrical workpieces are magnetically coupled with the concave surfaces thereof in aligned communication with an elongated slot therethrough and with the end edges thereof disposed in abutting bearing contact against the one face of the panel. Electrification of the workpieces while immersed in the electrolyte and supported in the cell is performed in a manner whereby a substantially uniform electroplating is obtained on the concave surface of the workpieces while the rear convex surfaces thereof are shielded and remain substantially devoid of any metallic deposit thereover.

3,751,355

CONTROL CIRCUIT FOR AN ELECTROLYTIC CELL

Harold Mandroian, La Canada, Calif., assignor to Atek Industries, Inc., North Hollywood, Calif.

Filed Feb. 8, 1971, Ser. No. 113,398
Int. Cl. B01k *3/00*; C22d *1/12*
U.S. Cl. 204—228 **14 Claims**



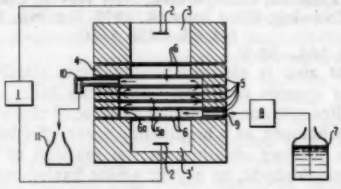
A control circuit for an electrolytic cell in which a positive feedback loop is utilized to increase the voltage across and the current through the electrolyte as the conductivity of the electrolyte increases.

3,751,356

METHOD AND APPARATUS FOR ELECTROEXTRACTION

Yasumitsu Takeya and Nobutaka Tsunakawa, Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Chuo-ku, Tokyo, Japan

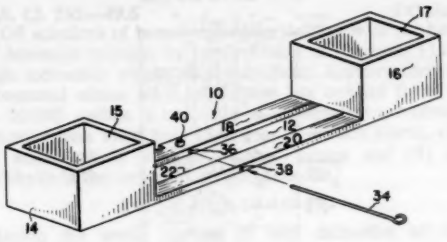
Filed Dec. 22, 1970, Ser. No. 100,730
Int. Cl. B01d *13/02*
U.S. Cl. 204—299 **4 Claims**



A method of electroextraction which comprises the steps of placing a sample into a sample chamber, simultaneously filling said chamber and two electrode vessels with a carrier solution, applying a voltage between the electrodes in such a manner that the test component flows through a multistage separation chamber, and supplying a carrier solution into the multistage separation chamber to extract the test component from the sample chamber through a dialysis membrane into the multistage separation chamber, then to an outlet. The electroextraction apparatus utilized in this process comprises a D.C. power supply, positive and negative electrodes connected to the power supply, two electrode vessels each containing an electrode, a sample chamber adjacent to one of the electrode vessels and separated therefrom by a dialysis membrane, a multistage separation chamber disposed adjacent to the sample chamber and between the sample chamber and the other electrode vessel, each stage being separated from

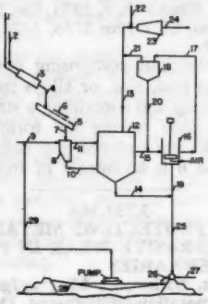
the adjacent stage by dialysis membranes with a port provided in the membranes between each stage with the multistage separation chamber being separated from the sample chamber on the one side and the other electrode vessel on the other side by dialysis membranes, a source of carrier solution, a constant flow pump for feeding the carrier solution into the multistage separation chamber, and an outlet from the multistage separation chamber.

3,751,357
ELECTROPHORESIS SYSTEM AND GEL FRAME
Stephen D. Rains, Henrietta, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed May 24, 1971, Ser. No. 146,387
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **20 Claims**



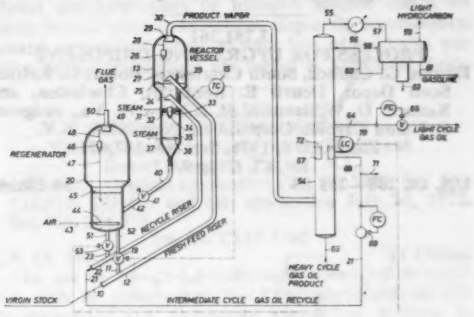
A gel frame for use in chemical analysis and, particularly, for electrophoresis testing, utilizing buffer chambers having a migration portion positioned therebetween, a wire-like element traversing the migration portion and a gel situated in the migration portion extending to or into the buffer chambers to engage a gel or a buffer solution for use in the chemical analysis.

3,751,358
FREEZE-THAW SEPARATION OF SOLIDS FROM TAR SANDS EXTRACTION EFFLUENTS
Orrin M. Elliott, Media, Pa., assignor to Great Canadian Oil Sands, Limited, Toronto, Ontario, Canada
Filed Jan. 19, 1972, Ser. No. 219,039
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 **14 Claims**



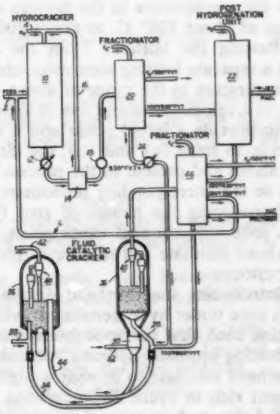
This specification discloses treatment of water discharged from a hot water process for separating bitumen from tar sands. The treatment comprises agglomerating clay dispersed in the water, alternately freezing and thawing the water into a sludge layer and a clarified water layer. The clarified water layer is substantially reduced in clay content compared to the water discharged from the hot water process and is suitable for recycle or discard.

3,751,359
CONVERSION OF HYDROCARBONS
Dorrance P. Bunn, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Sept. 27, 1971, Ser. No. 183,905
Int. Cl. C10g *13/14*
U.S. Cl. 208—155 **3 Claims**



A fluidized catalytic cracking process for the conversion of hydrocarbons comprising a reaction zone, a regeneration zone and a product fractionation zone. A selected product distribution, such as between gasoline and light cycle gas-oil, is maintained by recovering light cycle gas-oil at a selected rate from the product fractionation zone, and controlling hydrocarbon conversion in the reaction zone to maintain a set rate for a heavy cycle gas-oil recycle stream. The gasoline product is recovered from the product fractionation zone at the rate it is produced. Process control means for operating the process in the above manner are disclosed.

3,751,360
PROCESS FOR PREPARING JET FUEL
Jerome Bernstein, Berkeley Heights, and Walter Weissman, Rockaway, N.J., assignors to Esso Research and Engineering Company
Filed Apr. 13, 1971, Ser. No. 133,489
Int. Cl. C10g *37/06*
U.S. Cl. 208—61 **11 Claims**



Process for producing jet fuel is provided comprising hydrocracking at least a portion of a hydrocarbon stream boiling in the gas oil range in a hydrocracking zone while

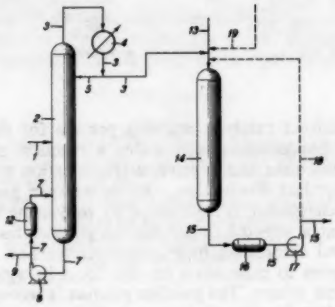
in contact with hydrogen and a hydrocracking catalyst, fractionating the effluent from the hydrocracking zone to recover a 320°/530° FVT jet fuel precursor and a 530° FVT+ bottoms stream; hydrogenating said 320°/530° FVT precursor to obtain jet fuel; catalytically cracking the 530° FVT+ stream in a catalytic cracking zone to obtain an additional 320°/530° FVT jet fuel precursor stream and gasoline; and hydrogenating said jet fuel precursor stream to obtain jet fuel.

3,751,361

PROCESS FOR UPGRADING DRIPOLENE

Edward G. Caflisch, South Charleston, Robert G. Keister, Scott Depot, Denvil E. Reed, Jr., Charleston, and Kenneth D. Williamson, St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,691
Int. Cl. C10g *9/12*
U.S. Cl. 208—255 SS **10 Claims**



A process for providing a high octane blending component for gasoline from dripolene feedstocks, containing at least five percent by weight of at least one dimer of the group consisting of dicyclopentadiene and the methyl derivatives thereof, one codimer formed from members of the group consisting of cyclopentadiene and the methyl derivatives thereof, or one codimer of the group consisting of cyclopentadiene and the methyl derivatives thereof with conjugated dienes having 4 to 10 carbon atoms comprising the following steps:

(a) Introducing the feedstock into a distillation zone wherein the temperature at the bottom of the zone is in the range of about 120° C. to about 300° C.;

(b) Passing the bottoms from the distillation zone through a separate heating zone associated therewith having a temperature in the range of about 120° C. to about 400° C. at a velocity of about five to about fifteen feet per second to provide a liquid phase and a vapor phase;

Wherein, in steps (a) and (b), the dimers or codimers defined above and present in the process are substantially cracked to the corresponding monomers thereof;

(c) Introducing the phases of step (b) into the distillation zone wherein said vapor phase becomes part of the overhead distillate and said liquid phase becomes part of the bottoms;

(d) Introducing the overhead distillate into a hydrogenation zone under hydrogenating conditions, said conditions being such that the zone is essentially incapable of hydrogenating aromatic hydrocarbons, and hydrogenating said overhead distillate to provide a high octane blending component rich in cyclic hydrocarbons having one five-membered ring and no more than one double bond;

Providing that (i) each of the aforementioned zones is essentialy oxygen-free; and (ii) the residence time of the feedstock and its derivatives in the process prior to step (d) is limited to the time in which no more than fifty percent by weight of the total cyclopentadiene and methyl derivatives thereof produced in the process dimerizes; and

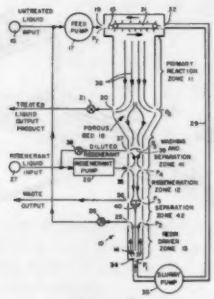
(e) Recovering the high octane blending component.

3,751,362

CONTINUOUS FLUID-SOLID CONTACT PROCESS

Ain A. Sonin, Boston, and Ronald F. Probstein, Brookline, Mass., and Josef Shwartz, Haifa, Israel, assignors to Avco Corporation, Cincinnati, Ohio

Filed July 8, 1971, Ser. No. 160,601
Int. Cl. B01d *15/02*
U.S. Cl. 210—33 **17 Claims**



This invention relates generally to fluid-solid contact processing systems, and, more particularly, to such systems as may be useful in ion exchange processes, which processes operate in a truly continuous manner and employ continuously moving porous beds for providing the fluid-solid reaction, regeneration, and washing operations, as desired, and which utilize unique means for isolating the fluid flow between operation zones thereof to provide high flow rates for the processed output products involved.

3,751,363

PIPE THREAD LUBRICANT STABILIZED WITH ORGANIC SULFIDES

Raymond Rohde and Marvin M. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,042
Int. Cl. C10m *5/16, 5/22*
U.S. Cl. 252—19 **6 Claims**

Pipe thread lubricants comprising mineral oil, metal dust selected from lead, zinc, or alloys thereof, and alkaline earth metal soap and containing a stabilizing amount of an organic sulfide having the formula $R—S_n—R^1$ wherein R and R^1 are hydrocarbon radicals of 2 to 20 carbon atoms and n is an integer of from 2 to 4.

3,751,364

METHOD OF PROTECTING METAL SURFACES AGAINST ABRASIVE WEAR IN PUMPS WITH POLYQUATERNARIES

Thomas J. Bellos, Kirkwood, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,457
The portion of the term of the patent subsequent to May 9, 1989, has been disclaimed
Int. Cl. C10m *1/18, 1/32*
U.S. Cl. 252—49.3 **6 Claims**

Solutions of water soluble and/or dispersible polyquaternary, polymerized, oxyalkylated amines not only offer protection against abrasive wear to submerged metal surfaces, such as in submersible oil well pumps, but also through their anti-bacterial and corrosion inhibiting action offer protection against corrosion and bacterial deteriora-

tion of the pump. In addition, because of increased water viscosity, they also reduce foaming and cavitation during pumping.

3,751,365

CONCENTRATES AND CRANKCASE OILS COMPRISING OIL SOLUTIONS OF BORON CONTAINING HIGH MOLECULAR WEIGHT MANNICH REACTION CONDENSATION PRODUCTS

Edmund J. Piasek, Chicago, and Robert E. Karll, Batavia, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Application Apr. 14, 1969, Ser. No. 816,125, now Patent No. 3,704,308, which is a continuation-in-part of application Ser. No. 502,368, Oct. 22, 1965, now Patent No. 3,539,633. Divided and this application Jan. 7, 1972, Ser. No. 216,272

Int. Cl. C10m *1/54*

U.S. Cl. 252—49.6 5 Claims

Oil solutions of boron-containing derivative of products of Mannich reaction by condensation of reactants (1) a high molecular weight alkyl-substituted hydroxyaromatic compound whose alkyl substituent has upward from 40 to 20,000 carbon atoms, (2) a lower alkyl-substituted phenol whose alkyl group has 2 to 20 carbon atoms, (3) an amine which contains a HN< group, and (4) an aldehyde in the respective molar ratio of

1.0:0–0.7:0.1–10:1.0–10,

wherein the boron content of said derivative of the Mannich reaction expressed as a boron to nitrogen weight ratio (B/N) is in the range of 0.1–5.5:1.0 and said boron derivative is present in weight concentrations of 0.05 to 70 percent as solute in mineral oil of the lubricating oil types. Such oil solutions are useful as crankcase lubricating compositions, or as concentrates for fortifying used crankcase lubricating composition and for preparation of crankcase lubricating compositions. Such solutions provide detergency, dispersancy and antioxidant properties necessary for crankcase oil function under high severity engine operation.

3,751,366

PROCESS FOR PREPARING FERRITE AND GARNET RAW MATERIALS FOR MICROWAVE APPLICATIONS

Steve H. Bomar, Jr., Atlanta, Ga., and Robert B. Clem, Huntsville, and Richard L. Buckelew, Arab, Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed June 4, 1971, Ser. No. 149,966

Int. Cl. C04b *35/26, 35/40*

U.S. Cl. 252—62.57 8 Claims

A novel process for preparing ferrite and garnet materials by mixing desired metal salts in the form of aqueous solutions, spray drying said aqueous solutions to form a powdery material, presintering the powdery material in an air or oxygen atmosphere to convert the material to mixed oxides having a ferrimagnetic crystal structure, in some cases milling the presintered material to break up the particles, molding into the desired form the resulting powder whether milled or not, and last, sintering the formed material by heating to the desired temperature for sintering.

3,751,367

COMPOSITIONS COMPRISING BORON COMPOUNDS AND POLYPHENYL THIOETHERS

Frank S. Clark and Loren W. Bannister, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed July 29, 1971, Ser. No. 167,463

Int. Cl. C09k *3/00*

U.S. Cl. 252—78 15 Claims

Compositions comprising polyphenyl thioethers, polyphenyl ethers-thioethers or mixtures thereof and a triphenylboroxin exhibit improved corrosiveness toward copper and silver without loss of oxidative stability. Such compositions are useful as functional fluids.

3,751,368

COMPOSITIONS COMPRISING BORON COMPOUNDS AND POLYPHENYL THIOETHERS

Frank S. Clark and Loren W. Bannister, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed July 29, 1971, Ser. No. 167,466

Int. Cl. C09k *3/00*

U.S. Cl. 252—78 9 Claims

Compositions comprising polyphenyl thioethers, polyphenyl esters-thioethers or mixtures thereof and a diphenylborinic anhydride exhibit improved corrosiveness toward copper and silver without loss of oxidative stability. Such compositions are useful as functional fluids.

3,751,369

DETERGENT COMPOSITIONS

Vincent Lamberti, Upper Saddle River, and Robert Reardon, Tenafly, N.J.

No Drawing. Original application Feb. 25, 1971, Ser. No. 118,972. Divided and this application July 24, 1972, Ser. No. 274,378

Int. Cl. C11d *1/08*

U.S. Cl. 252—89 11 Claims

The use of exo-cis-1,4-endoxo-alicyclic-2,3-dicarboxylates such as sodium exo-cis-1,4-endoxocyclohexene-2,3-dicarboxylates and derivatives thereof as builders in detergent compositions.

3,751,370

LOW-FOAMING RINSING WASHING AND CLEANING COMPOSITIONS

Hans-Josef Stimberg, Wesel-Obrighoven, Joachim Galinke, Dusseldorf-Holthausen, and Edmund Schmadel, Mettmann, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,772

Claims priority, application Germany, Aug. 31, 1970, P 20 43 086.8

Int. Cl. C11d *7/54*

U.S. Cl. 252—102 7 Claims

Low-foaming rinsing, washing and cleaning compositions comprising (A) from 90% to 99.9% by weight of at least one compound selected from the group consisting of anionic surface-active agents, amphoteric surface-active agents, non-ionic surface active agents, polymeric phosphates and complex-forming compounds, and (B) from 0.1% to 10% by weight of at least one foam inhibitor diurethane selected from the group consisting of diurethanes of the formula

(I) $R_1-O-\overset{\overset{O}{\|}}{C}-NH-R-NH-\overset{\overset{O}{\|}}{C}-O-R_1$

and

(II) $R_1-HN-\overset{\overset{O}{\|}}{C}-O-R-O-\overset{\overset{O}{\|}}{C}-NH-R_1$

wherein R represents a divalent hydrocarbon having from 2 to 20 carbon atoms and R_1 and R_2 represent monovalent hydrocarbons having from 8 to 30 carbon atoms.

3,751,371

SCALE FORMATION INHIBITING PROCESS USING SILICON-CONTAINING AMINOMETHYL PHOSPHONATES

Derek Redmore, Ballwin, and Frederick T. Welge, Webster Groves, Mo., assignors to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Oct. 12, 1970, Ser. No. 80,124, now Patent No. 3,716,569. Divided and this application Oct. 2, 1972, Ser. No. 294,204

Int. Cl. C02b *5/00*

U.S. Cl. 252—175 5 Claims

Silicon-containing aminomethyl, or substituted aminomethyl, phosphonic acids and derivatives thereof. The silicon atom is silicone functional (i.e. has a —SiO— group) and is also attached to an alkyleneamino group

which may have one or more amino groups (i.e. an alkyleneamino group having at least one N—H group) capable of reacting with a carbonyl compound (i.e. aldehyde or ketone) and phosphorous acid, or a derivative thereof, to form aminomethyl phosphonic acid. All, or less than all, of the N—H groups may be converted to aminomethyl phopshonic acids. The silicon-aminomethyl phosphonic acids may be monomeric, polymeric, or copolymeric. They are useful, for example, as corrosion inhibitors, scale inhibitors, water clarifiers and for other uses.

3,751,372

SCALE AND CORROSION CONTROL IN CIRCULATING WATER USING POLYPHOSPHATES AND ORGANOPHOSPHONIC ACIDS

David C. Zecher, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed June 18, 1971, Ser. No. 154,592
Int. Cl. C02b *5/00, 5/04, 5/06*
U.S. Cl. 252—181 **12 Claims**

Provides a composition and method for conditioning circulating water to reduce corrosion and/or scale accumulation on metal. The composition includes (1) certain water soluble in organic polyphosphates or their corresponding acids or (2) phosphorylated polyols together with (3) certain water soluble organophosphonic acids or their corresponding salts. Component (3) synergistically increases the efficiency of components (1) and (2). The method includes introducing the components into the water periodically, but preferably continuously, either separately or in combination.

3,751,373

PETROLEUM SULFONIC ACID FOAM CONTROL COMPOSITION AND ITS USE

Hillel Lieberman, Andalusia, and Anthony J. Graffeo, Willow Grove, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,553
Int. Cl. B01d *17/00*
U.S. Cl. 252—321 **13 Claims**

The present invention is directed to a composition and its use for the control of foam in aqueous systems and in particular pulp and paper making systems. The method generally comprises adding to the aqueous system a composition comprising a water-insoluble organic liquid, an ester of polyethylene glycol, a petroleum sulfonic acid and a tallow fatty acid and/or tallow fatty alcohol.

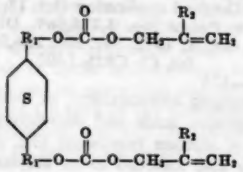
3,751,374

DISUBSTITUTED CYCLOHEXANE POLYMER COMPOSITIONS

David A. Berry, Columbus, and Gilbert M. Gynn, Hilliard, Ohio, assignors to Dart Industries Inc.

No Drawing. Original application July 22, 1969, Ser. No. 843,831, now Patent No. 3,679,727. Divided and this application June 24, 1971, Ser. No. 156,495
Int. Cl. C08g *45/18*
U.S. Cl. 260—17.4 CL **8 Claims**

Disubstituted cyclohexane compositions designated as either bis(2-alkylallylcarbonyldioxy) 1,4-dialkylene cyclohexane or bis(2-arylallylcarbonyldioxy) 1,4-dialkylene cyclohexane represented by the formula:



wherein R_1 is a lower alkyl and R_2 is hydrogen or an alkyl, aryl, aralkyl or alkaryl hydrocarbon radical, are useful in the production of polymers and copolymers. Compositions containing these polymers and copolymers when combined with the proper filler have outstanding stain resistance as well as excellent impact resistance and other strength properties when compared with prior art compositions recognized as outstanding for use in dinnerware.

3,751,375

STABILIZATION OF POLYURETHANE COMPOSITIONS AND RESINS USED TO PREPARE POLYURETHANE COMPOSITIONS

Newell R. Bender, Cuyahoga Falls, and Ronald B. Spacht, Hudson, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 34,537, May 4, 1970, now abandoned. This application Feb. 29, 1972, Ser. No. 230,489
Int. Cl. C08g *51/58*
U.S. Cl. 260—2.5 BB **5 Claims**

Polyurethane compositions, including polyurethane foam compositions, and resins from which said compositions are prepared, said compositions and resins being stabilized against degradation and discoloration by having incorporated therein phenolic antioxidants such as the reaction product of phenol and dicyclopentadiene, said reaction products having been subsequently alkylated with an olefin such as isobutylene.

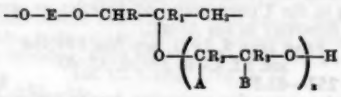
3,751,376

IONIC POLYMERS

Jean-Pierre Quentin, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

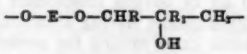
No Drawing. Filed June 16, 1971, Ser. No. 153,895
Claims priority, application France, June 18, 1970, 7022514
Int. Cl. C08g *23/10*
U.S. Cl. 260—2.1 R **14 Claims**

Shaped or unshaped ionic polymers are provided which comprise recurring units of formula



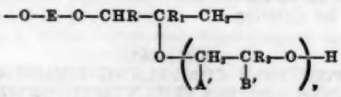
(I)

alone or with recurring units of formula



(II)

and/or formula



(III)

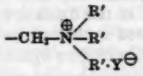
in which

each of R, R_1, R_2 and R_3, which may be the same or different, represents a hydrogen atom or a methyl radical,

E represents a divalent radical derived by removing the phenolic OH groups from a polynuclear diphenol in which the hydroxyl groups are attached to different nuclei,

x and *y* are positive numbers,

one of A and B represents a hydrogen atom and the other represents a radical of formula



in which $Y^{\ominus}$ is an anion and each of the symbols R′, which may be the same or different, represents a monovalent or divalent organic radical, or at least two of the radicals together form a single divalent or trivalent radical, all the valencies carried by the R′ groups being satisfied by nitrogen atoms of groups $—CH_2—N^{\oplus}$, and one of A′ and B′ represents a hydrogen atom and the other represents the $—CH_2X$ group, wherein X is a halogen atom.

These polymers have utility as anti-static agents, in improving the dye affinity of natural and synthetic polymers and as ion-exchange membranes.

3,751,377

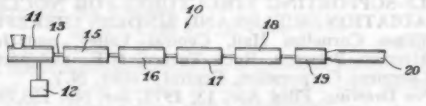
METHOD FOR THE PREPARATION OF PLASTIC FOAM

Morgan D. Buckner, Magnolia, Ark., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 19, 1971, Ser. No. 173,310

Int. Cl. B29d *27/02;* **C08f** *33/02, 47/10*

U.S. Cl. 260—2.5 E **5 Claims**



Thermoplastic foam is prepared by extrusion and injection of a fluid blowing agent into the heat plastified mass. The improvement is the inclusion of an interfacial surface generator; that is, motionless in-line mixer, whose mixing, under conditions of stream-line flow, can be considered independent of throughput. Foams of reduced density and increased homogeneity are obtained. Lower power is required, together with simplified equipment and reduced maintenance thereof.

3,751,378

INHIBITING PREVULCANIZATION OF RUBBER WITH POLYFUNCTIONAL METHACRYLATE MONOMERS AS CROSS-LINKING COAGENTS WITH PEROXIDES

George F. Cowperthwaite, Hatboro, John A. Cornell, Philadelphia, and John Edgar Lohr, Jr., Chester, Pa., assignors to Sartomer Industries, Inc., Essington, Pa.

No Drawing. Filed Mar. 31, 1971, Ser. No. 130,002

Int. Cl. C08f *15/18*

U.S. Cl. 260—4 **3 Claims**

Prevulcanization of elastomer is inhibited by incorporating critical amounts of N-nitroso diphenylamine or N,N′-dinitroso-para-phenyl diphenylamine as retarder, normally 0.2–2.0% based on the parts of elastomer, in polyfunctional acrylate cross-linking monomer which is liquid at mixing temperatures and serves to plasticize the rubber and is used in amounts of about 2 to 30 parts per 100 parts of elastomer. In the presence of about 5 to 30% of the retarder in the monomer, the liquid acrylate cross-linking monomer provides long Mooney scorch time but still permits efficient cross-linking to provide superior vulcanizates as compared with straight peroxide vulcanizates. This facilitates control of vulcanization during injection molding, extrusion, compression molding and calendering.

3,751,379

REGENERATION OF A COKE-DEACTIVATED BIMETALLIC CATALYST

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,403

Int. Cl. B01j *11/18;* **C10g** *35/06*

U.S. Cl. 252—415 **30 Claims**

A deactivated hydrocarbon conversion catalyst, which is a combination of a platinum group component, a group IV–A metallic component, and a halogen component with a porous carrier material and which has been deactivated by deposition of carbonaceous materials thereon during a previously contacting with a hydrocarbon charge stock at an elevated temperature, is regenerated by the sequential steps of: (1) burning carbon therefrom at a relatively low temperature with a gas stream containing halogen or a halogen-containing compound, H_2O, and a relatively small amount of O_2, (2) treating the resulting partially regenerated catalyst at a relatively higher temperature with a gas stream containing a halogen or a halogen-containing compound, H_2O, and a relatively higher amount of O_2, (3) purging O_2 and H_2O from contact with the resulting catalyst, and (4) subjecting the resulting catalyst to contact with a substantially sulfur-free hydrogen stream at reduction conditions. Key features of the disclosed method are: (1) presence of water and halogen in the gas stream used in the carbon-burning step and in the oxygen-treating step, (2) careful control of the temperature during each step, (3) maintenance of the halogen content of the catalyst at a relatively high level during the entire regeneration procedure, and (4) careful control over the composition of the gas streams used in the various steps thereof.

3,751,380

METHOD OF PREPARING A CATALYST

Mark J. O'Hara, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,342

Int. Cl. B01j *11/40, 11/74*

U.S. Cl. 252—439 **6 Claims**

A method of preparing a hydrorefining catalyst for the conversion of C_7-insoluble asphaltenes and sulfurous components in a residual oil. The catalyst comprises a refractory inorganic oxide carrier material impregnated with a metal of Groups VI–B and VIII. Improved activity and stability results from novel oxidizing and reducing procedures prior to sulfiding of the catalyst.

3,751,381

DYED ALBUMEN-COHN FRACTION III-LIPID MIXTURES SERUM LIPID ASSAY STANDARD

Robert E. Megraw, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,953

Int. Cl. G01n *33/16*

U.S. Cl. 252—408 **3 Claims**

The present invention relates to a diagnostic aid which comprises a reference standard obtained from a lipid rich fraction of human blood serum which contains predetermined amounts of total lipids, cholesterol, triglycerides, phosphatides, free fatty acids and optionally, glucose.

3,751,382
ENZYMATIC INDICATOR AND METHOD OF MAKING IT

Stellan Ljungberg, Lidingo, and Karl Olof Alm, Vaxjo, Sweden, assignors to Food Control AB, Malmo, Sweden

Continuation-in-part of abandoned application Ser. No. 19,033, Mar. 12, 1970. This application Dec. 17, 1971, Ser. No. 209,232

Claims priority, application Sweden, Mar. 13, 1969, 3,471/69; Denmark, Nov. 12, 1971, 5,553/71

Int. Cl. G01n *31/14*

U.S. Cl. 252—408 **11 Claims**

An enzymatic indicator and a method of making the indicator which comprises the enzyme urease, the substrate urea, a pH-responsive indicating substance, optionally a buffer, and, for changing and adjusting the time-temperature-responsive function of the indicator at low temperatures, glycerol.

3,751,383
METHOD OF PREPARING A CATALYST FOR THE HYDROREFINING OF RESIDUAL OILS

Mark J. O'Hara, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,339

Int. Cl. B01j *11/22, 11/40*

U.S. Cl. 252—455 R **5 Claims**

A method of preparing a hydrorefining catalyst for the conversion of C_7-insoluble asphaltenes and sulfurous components in a residual oil. The catalyst comprises a refractory inorganic oxide carrier material impregnated with a metal of Groups VI–B and VIII. Improved activity and stability results from novel calcining procedures.

3,751,384
ORGANOLITHIUM-POLYAMINE COMPOSITIONS

Arthur W. Langer, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 825,384, May 16, 1969, now Patent No. 3,536,679, and a continuation-in-part of application Ser. No. 690,054, Dec. 13, 1967, and a continuation-in-part of application Ser. No. 886,008, Dec. 17, 1969, and a continuation-in-part of application Ser. No. 886,009, Dec. 17, 1969, and a continuation-in-part of application Ser. No. 690,076, Dec. 13, 1967; said Ser. No. 825,384, which is a continuation-in-part of application Ser. No. 589,240, Oct. 25, 1966, now Patent No. 3,451,988, and which is a continuation-in-part of application Ser. No. 266,188, Mar. 19, 1963, now abandoned; said Ser. No. 690,054, which is a continuation-in-part of application Ser. No. 560,110, June 24, 1966, now abandoned, and which is a continuation-in-part of application Ser. No. 505,976, Nov. 1, 1965, now abandoned, and which is a continuation-in-part of application Ser. No. 359,434, Apr. 3, 1964, now Patent No. 3,458,856, and which is a continuation-in-part of application Ser. No. 266,188, Mar. 19, 1963. This application Oct. 15, 1970, Ser. No. 81,181

The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed

Int. Cl. C07c *87/20, 87/34, 87/54*

U.S. Cl. 252—431 N **1 Claim**

Graft polymers are prepared by contacting an anionically polymerizable monomer such as butadiene with a polymer-Li●tertiary chelating polyamine complex such as polystyrene-Li●tetramethyl ethanediamine.

3,751,385
MANGANESE FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Oct. 7, 1970, Ser. No. 78,956

Int. Cl. B01j *11/22, 11/26*; C07c *5/18*

U.S. Cl. 252—447 **8 Claims**

The presence of 1 to 20 weight percent carbon black in a manganese ferrite oxidative dehydrogenation catalyst improves the yields from oxidative dehydrogenation reactions employing such catalyst. The presence of about 5 wt. percent carbon black in a manganese ferrite containing chromium as a promoter result in up to 7.3% absolute increase in yield in the oxidative dehydrogenation of isoamylene as compared to the catalyst prepared under the same conditions without carbon black.

3,751,386
CATALYST FOR PURIFICATION OF WASTE GASES

Edgar Koberstein, Alzenau, and Eduard Lakatos, Hurth-Hermulheim, Germany, assignors to Laporte Industries Limited, London, England, and Deutsche Gold- und Silber-Scheideanstalt, Frankfurt, Germany

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,721

Claims priority, application Germany, Apr. 17, 1970, P 20 18 378.2

Int. Cl. B01j *11/22*

U.S. Cl. 252—465 **21 Claims**

Catalyst compositions are provided containing aluminium oxide and from 50% to 90% by weight of oxide of copper, chromium and nickel, which may optionally be doped with Group II–A metal compounds, the oxide of nickel amounting from 2% to 20% by weight of the catalyst. The catalysts are manufactured by mixing powdered calcined oxide of copper and chromium with aluminium oxide or aluminium oxide hydrate, forming catalyst granules from the mixture and then impregnating the granules with a nickel compound which on calcination will form the catalyst. The catalysts are used in the oxidative purification of waste gases particularly motor vehcile exhaust gases.

3,751,387
SELF-SUPPORTING STRUCTURES FOR NUCLEAR RADIATION SHIELDS AND BINDERS THEREFOR

William Cornelius Hall, Central Valley, and John Merriam Peterson, Rock Tavern, N.Y., assignors to Chemtree Corporation, Central Valley, N.Y.

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,751

Int. Cl. C04b *35/68*; G21c *11/00*; G21f *1/10*

U.S. Cl. 252—478 **17 Claims**

A composition is provided which is adapted for producing a self-supporting structure and particularly a nuclear radiation shield. The composition includes a mixture of at least two solid materials and a solvent for one or more of these materials admixed with the mixture of solid materials. The solvent employed may be water or an organic compound, or the like. The solute may be inorganic or an organic compound and preferably sucrose. The other solid material or materials are substances that have good attenuating characteristics for nuclear radiation of various types and energy levels, particularly for neutrons and gamma (or X-ray) radiation. These substances contain atoms such as hydrogen, which are effective in reducing neutron energy by elastic scatter; atoms such as carbon, which are efficient in moderating higher energy neutrons to thermal neutron energy levels; atoms such as lithium, boron and gadolinium, which are good elements for the capture of thermalized neutrons; and atoms of heavy metals such as lead, tungsten and depleted uranium, which have good attenuating characteristics for gamma and X-ray radiation. There is also provided a method for forming a self supporting structure which comprises admixing sucrose or other soluble material with a second solid material, a solvent for the sucrose or its substitute being employed. The ingredients are mixed to obtain preferably a saturated solution of the solute and a product of mortar consistency. This product is shaped and cured to form a self-supporting structure.

ERRATA

For Classes 260—17.4 thru 260—4 R see:
Patents Nos. 3,751,374 and 3,751,378

3,751,388

MODIFIED POLYPHENYLENE OXIDE COMPOSITION CONTAINING A FATTY ACID BISAMIDE EITHER ALONE OR IN ADMIXTURE WITH A METAL SALT OF A FATTY ACID

Minoru Tabana, Sulta, Takuzo Okumura, Takatsuki, and Kiyoshi Yasuno, Ibaragi, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 115,799, Feb. 16, 1971. This application Feb. 14, 1972, Ser. No. 226,268

Claims priority, application Japan, Feb. 19, 1970, 45/14,585

Int. Cl. C08g *43/02*

U.S. Cl. 260—23 S 11 Claims

A modified polyphenylene oxide composition with improved processability comprising a modified polyphenylene oxide, which is prepared by polymerizing at least one unsubstituted or substituted styrene compound in the presence of a polyphenylene oxide with or without a rubbery polymer, and an additive selected from the group consisting of a fatty acid bisamide and a mixture of the fatty acid bisamide and a metallic salt of a fatty acid. Said composition has a low molding temperature and an improved moldability. The mold releasing property and the surface appearance of the molded articles are also satisfactory.

3,751,389

THERMALLY HARDENABLE COMPOSITIONS

Tetsuya Hotta, Reiho Takabe, and Sadao Nishita, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi Horidome-cho, Chuo-ku, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 11,903, Feb. 16, 1970. This application Feb. 28, 1972, Ser. No. 230,044

Int. Cl. C08f *45/52;* C08c *11/68*

U.S. Cl. 260—28.5 B 6 Claims

A thermosetting composition is disclosed which is capable of providing molded products having high hardness and high softening point which comprises:

(a) 25–84.5 parts by weight of petroleum-cracked pitch obtained by subjecting petroleum or a petroleum product to thermocracking at a temperatrue of 700° C., or higher and separating the lighter fractions and constituents having a lower distillation point than 400° C., from the cracked residual mixture,

(b) 10–40 parts by weight of a rubber having unsaturated double bonds,

(c) 5–30 parts by weight of sulfur, and

(d) 0.5–5 parts by weight of a vulcanization accelerator, said pitch having a hydrogen to carbon atomic ratio of less than 1.0 and the total parts by weight of all constituents amounting to approximately 100.

3,751,390

SUBSTITUTED DIBENZOFURAN

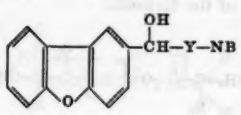
Harvey B. Hopps, West Allis, Wis., Dennis Jackman, University, Miss., and John H. Biel, Lake Bluff, Ill., assignors to Aldrich Chemical Company Inc., Milwaukee, Wis.

No Drawing. Continuation-in-part of application Ser. No. 693,765, Dec. 27, 1967, which is a continuation-in-part of application Ser. No. 605,995, Dec. 30, 1966, which in turn is a continuation-in-part of application Ser. No. 462,066, June 7, 1965, all now abandoned. This application May 19, 1971, Ser. No. 145,070

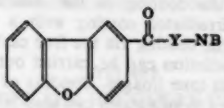
Int. Cl. C07d *31/28*

U.S. Cl. 260—297 T 8 Claims

Compounds of the formula



which possess hypotensive activity and are useful for treating hypertension in mammals and compounds of the formula



which are useful as intermediates in the preparation of the foregoing hypotensive agents and also in some cases exhibit hypotensive, sedative and muscle relaxant activity and processes for the preparation of the foregoing compounds. In the foregoing formulae, NB is a primary or secondary amino radical and Y is (lower)alkylene.

3,751,391

ZINC OXIDE-POLY(ACRYLIC ACID) SURGICAL CEMENTS

Dennis Clifford Smith, Markham, Ontario, Canada, assignor to National Research Development Corporation, London, England

No Drawing. Continuation of application Ser. No. 836,991, June 26, 1969, which is a continuation-in-part of application Ser. No. 692,711, Dec. 22, 1967. This application Oct. 28, 1971, Ser. No. 193,533

The portion of the term of the patent subsequent to Apr. 11, 1989, has been disclaimed

Int. Cl. A61k *5/00;* C08f *29/34*

U.S. Cl. 260—29.6 M 10 Claims

Dental cements are prepared by mixing a surgical grade metal oxide powder with a water-soluble polymer of acrylic acid and water to give a plastic mass that rapidly hardens. The cements thus produced have greater adhesion and cause less irritation than conventional zinc phosphate cements.

3,751,392

PROCESS OF FOAMING POLYURETHANES WITH INORGANIC HYDRATED METAL SALTS

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 24, 1972, Ser. No. 246,922

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AB 6 Claims

Polyurethane foams are prepared employing as the blowing agent an inorganic hydrated metal salt characterized as having a solubility in anhydrous ethanol at 20° C. of less than 1.2 grams/100 grams of ethanol and which exhibits a weight loss of at least about 5% when subjected to a temperature of 115° C. for 30 minutes. The blowing is due to the steam developed from the removal of a portion of the water of hydration and not from CO_2 as a result of reaction of such removed water with the isocyanate. When the inorganic hydrated metal salt is not a hydrated alkali metal aluminate, the use of a heavy metal carboxylate catalyst is essential to obtain foaming by steam rather than CO_2.

3,751,393

RADIATION-SENSITIVE POLYMERS PREPARED FROM HYDROXYL CONTAINING POLYMERS AND 4 - AZIDOSULFONYL-PHTHALIC ANHYDRIDE

Adnan A. R. Sayigh and Fred A. Stuber, North Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 10, 1971, Ser. No. 142,042

Int. Cl. C08g *5/18, 33/00*

U.S. Cl. 260—49 4 Claims

Radiation-sensitive polymers are prepared by reacting a polymer having a free hydroxyl group in the molecule with 4-azidosulfonylphthalic anhydride. The polymers so obtained contain free carboxy groups which can be converted to water soluble salts. The polymers are useful

for chemically bonding basic dyestuffs to non-dyereceptive substrates (e.g. polyolefins) by coating the substrate with the polymer, exposing the coated substrate to irradiation to bond the coating to the substrate and then contacting the irradiated coating with a basic dyestuff which bonds to the coating via the free carboxylic groups therein. The irradiation can be carried out imagewise to obtain continuous tone images. Bonding of the radiation-sensitive polymers to substrates can also be used to make photoresists and also to render hydrophilic a variety of substrates which ordinarily are hydrophobic.

3,751,394

SELF-EXTINGUISHING POLYAMIDE MOULDING COMPOSITIONS

Karl Heinz Hermann, Krefeld Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,267
Claims priority, application Germany, Sept. 23, 1970, P 20 46 832.0
Int. Cl. C08g *51/06, 51/10, 51/56*
U.S. Cl. 260—37 N **2 Claims**

Self-extinguishing polyamide moulding compositions comprising a polyamide and as flame-retarding additives 0.5 to 25% by weight of at least one halogen-containing tin compound.

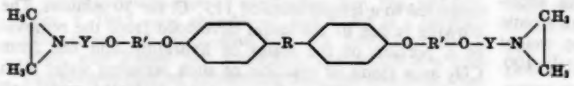
3,751,395

CASTING MATERIALS FOR DENTAL PURPOSES CONTAINING A BIS-ETHYLENE-IMENE COMPOUND CAPABLE OF BEING CROSSLINKED

Werner Schmitt and Robert Purrmann, Starnberg, Peter Jochum, Pilsensee, and Wolf-Dietrich Zahler, Haar, near Munich, Germany, assignors to Espe Fabrik Pharmazeutischer Praparate G.m.b.H., Seefeld, Bavaria, Germany

No Drawing. Application July 3, 1967, Ser. No. 650,588, now Patent No. 3,634,400, which is a continuation-in-part of abandoned application Ser. No. 288,538, June 17, 1963. Divided and this application Aug. 18, 1971, Ser. No. 172,927
Claims priority, application Germany, June 20, 1962, E 23,068; Jan. 20, 1967, E 33,247
Int. Cl. C07d *23/06*
U.S. Cl. 260—37 N **3 Claims**

The present invention relates to material for making casts for dental purposes, which material substantially comprises bis-ethylene-imine compounds capable of being cross-linked and having the formula



wherein R is an alkylidene radical with 1–6 carbon atoms, a cycloalkylidene radical or an SO_2 radical; R' an alkylene radical having 2–6 carbon atoms or a cycloalkylene radical, and Y an acyl radical of a carboxylic acid with 2–6 carbon atoms, which may also be substituted by an aromatic substituent.

3,751,396

REINFORCED POLYALKYLENE TEREPHTHALATE MOLDING RESIN HAVING REDUCED BURNING PROPERTIES IN THIN SECTIONS

John S. Gall, North Haledon, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 46,823, June 16, 1970. This application Nov. 27, 1970, Ser. No. 93,511
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R **24 Claims**

Improved product for eliminating dripping of flaming particles during burning of articles less than about ⅛ inch in thickness and molded from an intimate blend of polypropylene terephthalate or polybutylene terephthalate, a reinforcing agent, wherein the reinforcing agent comprises particles having a length to diameter ratio of less than about 50:1, an aromatic halide and a group V*b* metal containing compound. Dripping of flaming particles is eliminated by incorporating into the intimate blend of supplementary reinforcing agent having a length to diameter ratio of greater than about 50:1.

3,751,397

PROPYLENE POLYMER COMPOSITION CONTAINING GLASS FIBERS

Kazuki Muto, Otake, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed June 14, 1971, Ser. No. 153,122
Claims priority, application Japan, June 5, 1970, 45/48,064
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 AG **3 Claims**

A glass fiber-reinforced propylene polymer composition comprising a modified propylene polymer having grafted thereto both styrene and maleic anhydride, and glass fibers treated with an aminotrialkoxy silane compound, and optionally an olefin polymer as a third component. The composition has high tensile modulus of elasticity and stress at bending yield point. Maleic anhydride can be grafted at a high ratio in the presence of styrene.

3,751,398

SPRAY DRYING PROCESS

Klaus J. Dahl, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 115,824, Feb. 16, 1971. This application Jan. 17, 1972, Ser. No. 218,483
Int. Cl. C08g *33/00, 53/00*
U.S. Cl. 260—47 R **11 Claims**

Poly (aromatic ketones) and poly (aromatic sulfones) prepared by boron trifluoride-catalyzed Friedel-Crafts condensation in hydrogen fluoride are recovered from polymerization media by spray drying hydrogen fluoride solutions of the same which contain substantial proportions of liquid sulfur dioxide, preferably from about 90 to 99% volume. At least a portion of the SO_2 may be present during polymerization, e.g., 50% by volume. Product spray dried with SO_2 is lighter in color and contains less fluorine than that arising from spray drying with HF alone, and enjoys superior heat stability in the melt as compared to product recovered by precipitation in a non-solvent. The polymer may be employed, e.g., in electrical insulation.

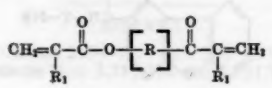
3,751,399

POLYACRYLATE RESIN COMPOSITIONS

Henry L. Lee, Jr., San Marino, and Donald G. Stoffey, Hacienda Heights, Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

No Drawing. Filed May 24, 1971, Ser. No. 146,467
Int. Cl. A61k *5/02;* **C09k** *3/00*
U.S. Cl. 260—47 UA **28 Claims**

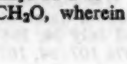
Compositions of aromatic and alicyclic polyacrylate compounds comprising from 25% to 90% by weight of a polyacrylate of the formula:



wherein

R_1 is hydrogen or alkyl of 1 to 4 carbons; and
R is:

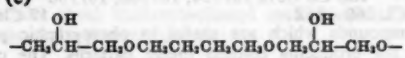
(a)



wherein x is an integer of 1 to 5, and R_2 is hydrogen or an alkyl of 1 to 4 carbon atoms;

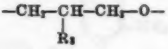
(b) $CH_2(CH_3)_yCH_2O$, wherein y is an integer of 1 or 2;

(c)

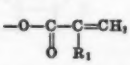


or

(d)



wherein R_3 is OH or



and R_1 has the same meaning as above;

and 10 to 75% by weight of an aromatic or alicyclic polyacrylate compound are utilized in various dental restorative applications. A particularly suitable composition is one comprising BIS-GMA and triethylene glycol dimethacrylate.

3,751,400

HIGH IGNITION TEMPERATURE POLYMERS SUBSTITUTED WITH HALOGEN SUBSTITUTED AROMATIC GROUPS

Timothy P. Crennan, Lenox, Mass., and Donald B. G. Jaquiss, New Harmony, Ind., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 28,180, Apr. 13, 1970, which is a continuation of application Ser. No. 532,870, Mar. 9, 1966, both now abandoned. This application July 29, 1971, Ser. No. 167,484

Int. Cl. C08g *17/13, 51/58*

U.S. Cl. 260—47 XA 8 Claims

High ignition temperature aromatic carbonate polymers derived from dihydric phenols containing terminal bromine substituted aromatic group and contain 3–5 halogen atoms. The polymers are prepared by reacting bisphenol-A, phosgene and pentabromophenol, for example.

3,751,401

VULCANIZABLE COMPOSITIONS CONTAINING CYANOISOTHIAZOLYL BIS(DITHIOCARBAMATES)

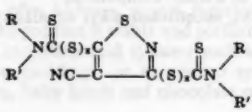
John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 861,137, Sept. 25, 1969. This application Oct. 4, 1971, Ser. No. 186,484

Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 B 13 Claims

Cyanoisothiazolyl bis(dithiocarbamates) of the formula



wherein R and R' individually are alkyl, cycloalkyl, or aryl, and R and R' together with the nitrogen atom form a heterocycle, and *x* is one or two which are useful for accelerating the vulcanization of rubber.

3,751,402

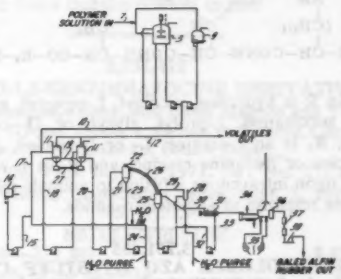
PROCESS FOR THE RECOVERY OF RUBBERY POLYMERS IN CRUMB FORM

Leo H. Broering, Fort Wright, Ky., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of abandoned application Ser. No. 839,332, July 7, 1969, which is a continuation-in-part of application Ser. No. 815,723, Apr. 14, 1969, now Patent No. 3,535,296. This application June 1, 1971, Ser. No. 149,043

Int. Cl. C08d *5/02, 5/04*

U.S. Cl. 260—82.1 15 Claims



A process is provided for the preparation of rubbery polymers in satisfactory crumb form that can be readily handled and processed, from polymer formed in a reaction solution in an inert, volatile, nonaqueous solvent, in the presence of an alkali metal catalyst which hydrolyzes in water to form an alkaline solution. The process comprises precipitating the polymer from the reaction solution in the presence of water by subjecting the polymer solution to steam-stripping to volatilize and remove unreacted monomer, volatile low polymer and solvent in the presence of an anionic surfactant and a nonionic surfactant and thereafter recovering the rubbery polymer crumb.

3,751,403

RAPID ANIONIC POLYMERIZATION OF VINYL AROMATIC MONOMERS

Junji Hara, Kamakura, Yoshiharu Nakazima, Yokohama, and Yoshitoshi Honjo, Kamakura, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,511

Claims priority, application Japan, Sept. 22, 1970, 45/83,204

Int. Cl. C08f *19/02*

U.S. Cl. 260—88.2 C 16 Claims

An aromatic vinyl monomer containing an organo alkali metal anionic catalyst can be rapidly polymerized without the debilitating effects of heat of polymerization if anionic polymerization is initiated by heating at least one small local area to a temperature over 40° C. and sequentially continuing polymerization through surrounding

areas progressively using heat of polymerization generated in each preceding area to initiate anionic polymerization in the surrounding monomer area.

3,751,404

L-PROLYL-L-ARGINYL-L-VOLYL-L-TYROSYL-L-VOLYL-L-HISTIDYL-L-PROLYL-GLYCINE

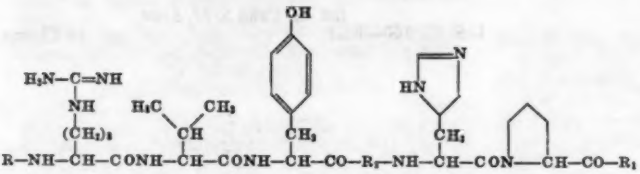
Frank Sipos, East Brunswick, N.J., Donald T. Pals, Columbia, Mo., and George S. Denning, Jr., Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 43,595, June 4, 1970, and Ser. No. 17,920, Mar. 9, 1970. This application Feb. 12, 1971, Ser. No. 115,045

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **1 Claim**

Novel hepta- and octapeptides of the formula:



wherein R is hydrogen, succinyl, L-aspartyl, sarcosyl, L-seryl, succinamyl, L-prolyl, glycyl, or D- or L-asparaginyl; R_1 is an L-alanine, L- or D-leucine, glycine, L-isoleucine or β-alanine residue; and R_2 is L-valyl, or L-alanyl upon intravenous infusion to animals inhibit blood pressure response to angiotensin amide.

3,751,405

WATER-INSOLUBLE AZO DYESTUFF CONTAINING A 3-(2'-THIENOYL- OR FUROYLAMINO) ANILINE GROUP

Hans-Joerg Angliker and Richard Peter, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

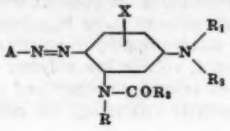
No Drawing. Continuation-in-part of application Ser. No. 757,478, Sept. 4, 1968. This application Feb. 18, 1971, Ser. No. 116,639

Claims priority, application Switzerland, Sept. 7, 1967, 12,524/67

Int. Cl. C09b *29/00, 29/36, 29/38*

U.S. Cl. 260—158 **5 Claims**

Water insoluble azo dyestuffs of the formula



in which A represents the radical of a diazo component, R represents an alkyl group having at most 4 carbon atoms, or a hydrogen atom, R_1 represents a hydrogen atom or an alkyl group that may be substituted, R_2 represents an alkyl group that may be substituted, R_3 represents a five-membered heterocyclic radical which must be substituted when it represents a furan ring, and X represents a hydrogen atom or an alkyl, alkoxy, aryloxy or arylmercapto group are useful for dyeing polyester fibers orange to violet shades of excellent fastness to light and sublimation.

3,751,406

AZO COMPOUNDS USEFUL IN PHOTOGRAPHIC PROCESSES

Stanley M. Bloom, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed July 24, 1967, Ser. No. 655,338

Int. Cl. C07c *107/04, 107/06, 107/08*

U.S. Cl. 260—162 **17 Claims**

Compounds which are useful in photographic processes for producing colored image patterns. The compounds initially are immobile and non-diffusible in photographic processing compositions. However, when oxidized, the compounds undergo intermolecular rearrangement to split off a mobile and diffusible color providing material.

3,751,407

HYDROXYMETHYLATED POLYAZO DYES

Heinz Wicki, Allschwil, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

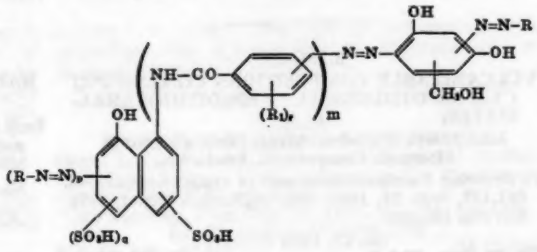
No Drawing. Filed Apr. 15, 1970, Ser. No. 28,974

Claims priority, application Switzerland, May 13, 1969, 7,281/69; Dec. 23, 1969, 19,043/69

Int. Cl. C09b *31/04, 31/18, 33/18*

U.S. Cl. 260—169 **14 Claims**

New polyazo dyes produced by coupling a monoazo compound, which is prepared from a diazotized 1-amino-8 - hydroxynaphthalene-monosulphonic or -disulphonic acid or one of its 3'- or 4'-aminobenzoylamino derivatives and a 1,3-dihydroxyhydroxymethylbenzene, with 1 to 2 moles of any desired diazo component, for the dyeing of leather. The dyes have the formula



wherein

R is the radical of a diazo component,

R_1 is halo, alkyl, substituted alkyl or alkoxy,

m is 0 or 1,

p is 0 or 1,

q is 0 or 1, and

r is 0 or 1.

3,751,408

IMIDAZOLE-RIBOSYL CYCLOPHOSPHATE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Hans Ulrich Bergmeyer, Gerhard Michal, and Michael Nelboeck-Hochstetter, Tutzing, Upper Bavaria, Harald Stork, Mannheim-Feudenheim, and Gunter Weimann, Percha, Upper Bavaria, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

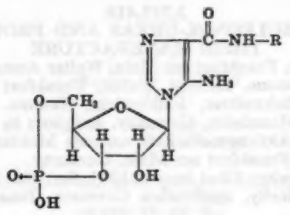
No Drawing. Filed May 21, 1971, Ser. No. 145,913

Claims priority, application Germany, May 27, 1970, P 20 26 040.6

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R 7 Claims

Certain novel imidazole-ribosyl cyclophosphate compounds of the general formula:



(I)

wherein

R is a hydrogen atom or a $(CH_2)_n$—A radical, in which *n* is 2 or 3

A is a sulfo or COR′ group and

R′ is hydroxyl, alkoxy containing from 1 to 6 carbon atoms or propionamido;

and the salts thereof are outstandingly effective anti-hyperlipemic agents and, particularly, as anti-cholesterol agents.

3,751,409

METHOD FOR PRODUCING SUGAR ACETALS

Chi-Hang Lee, Spring Valley, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed June 7, 1971, Ser. No. 150,731

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R 4 Claims

Sugar acetals commonly employed as intermediates for the synthesis of other compounds useful in foods and drugs, are prepared by a novel one-step process which reacts sugars containing pyranose and furanose rings with a n,n-dialkoxyalkane in the presence of an acid catalyst. Several new sugar acetals are produced utilizing this process.

3,751,410

STARCH DERIVATIVES

Joseph Ronald Caracci, Chicago, Felix Joseph Germino, Palos Park, and Tokuji Daniel Yoshida, Chicago, Ill., assignors to CPC International Inc.

No Drawing. Continuation of abandoned application Ser. No. 748,160, July 20, 1968. This application May 20, 1971, Ser. No. 145,479

Int. Cl. C08b *19/04*

U.S. Cl. 260—233.5 1 Claim

A process for producing stable starch derivatives having utility as food components, particularly as thickeners. Starch is cross-linked by reacting with sodium tri-metaphosphate. After cross-linking the starch is modified by incorporation of a hydroxy propyl functional group.

The resulting product is stable and performs well in food compositions including acid systems such as fruit pie fillings or lemon puddings, or in neutral systems such as sauces, gravies, baby foods and chocolate puddings.

3,751,411

COMPOSITIONS COMPRISING STARCHES CONTAINING NONIONIC, BASIC AND ACIDIC GROUPS AND PREPARATION THEREOF

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa

No Drawing. Application July 28, 1970, Ser. No. 58,988, which is a continuation-in-part of application Ser. No. 733,233, May 31, 1968, now abandoned. Divided and this application Feb. 18, 1972, Ser. No. 227,671

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R 14 Claims

Compositions comprising starches, especially high amylose starches, containing nonionic, basic (cationic) and acidic (anionic) groups, preferably hydroxyalkylether (nonionic), tertiary amino, cyanamide or quaternary amino (cationic) and sulfonic acid or sulfonate groups or carboxylic or carboxylate, or phosphate or phosphonate (anionic), in the starch molecule, are prepared which are especially useful for sizing threads or yarns of mixed fibers such as, for example, cotton fibers and polyester fibers, viz, polyethylene terephthalate fibers, and hydrophobic fibers that are difficult to size.

3,751,412

2-AMINO-1,5-BENZODIAZOCINE DERIVATIVES

Hideaki Natsugari, Osaka, and Kanji Meguro and Yutaka Kuwada, Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

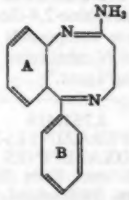
No drawing. Filed Sept. 2, 1971, Ser. No. 177,511

Claims priority, application Japan, Sept. 3, 1970, 45/77,313

Int. Cl. C07d *53/00*

U.S. Cl. 260—239 BD 8 Claims

Compounds of the formula



wherein rings A and B are unsubstituted or have one or more of the same or different substituents selected from the group of halogen, nitro, trifluoromethyl, lower alkyl and lower alkoxy and pharmaceutically acceptable salts thereof have diuretic activity and low acute toxicity.

3,751,413

3 - (α-SUBSTITUTED AMINO-β-ALKOXYBENZOXYPROPYL)-6,7- OR 6,7,8-ALKOXY - 1,2,3-BENZOTRIAZINE-4(3H)-ONES

Adolf Stachel, deceased, by Ingeburg Lydia Katharina Stachel, heiress, 4 Bierbrauerweg, 605 Offenbach (Main), Germany; Rudi Beyerle, 15 Allensteinerstrasse, 6451 Bruchkobel, Germany; Rolf-Eberhard Nitz, 4 Heinrich-Bingemer-Weg, 6 Bergen-Enkheim, Germany; and Klaus Resag, 15 Hunfelderstrasse; and Eckhard Schraven, 24 Fuldaerstrasse, both of 6 Frankfurt am Main-Fechenheim, Germany

No Drawing. Original application May 18, 1970, Ser. No. 38,544, now Patent No. 3,706,739. Divided and this application June 22, 1972, Ser. No. 265,221

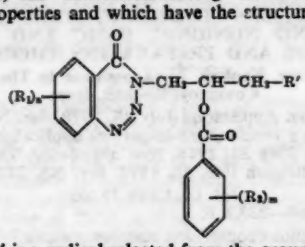
Claims priority, application Germany, May 22, 1969, P 19 26 075.4

Int. Cl. C07d *55/08*

U.S. Cl. 260—248 AS 4 Claims

The present invention pertains to new, pharmacologically valuable basically substituted 1,2,3-benzotria-

zine-4(3H)-one derivatives having excellent coronary dilator properties and which have the structural formula



wherein R' is a radical selected from the group consisting of N,N - di - lower-alkylamino, N-lower-alkyl-N-allyl-amino, N - lower-alkyl-N-(methoxy-lower-alkyl)-amino, N-lower-alkyl-N-(diethylamino-lower-alkyl)-amino and N-lower-alkyl-N-benzyl-amino, lower alkyl meaning alkyl having 1 to 4 carbon atoms, said radical being bound via its nitrogen atom; R_1 is a lower alkoxy group having 1–4 carbon atoms which may be in the 6,7 or 6,7,8-position; R_2 is an alkoxy group having 1–4 carbon atoms; *m* is an integer selected from 1, 2 and 3; and *n* is an integer selected from the group consisting of 2 and 3 and pharmaceutically acceptable acid addition salts thereof.

3,751,414
3-SUBSTITUTED DERIVATIVES OR 1,3(3H)-BENZOXAZINE-2,4-DIONE

Herbert John Havera, Edwardsburg, Mich., and Shin Hayao, Tokyo, Japan, assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 563,959, July 11, 1966. This application Sept. 13, 1971, Ser. No. 180,092
Int. Cl. C07d *87/10*
U.S. Cl. 260—244 R **4 Claims**

Compounds which are a series of 3-substituted derivatives of 1,3(3H)-benzoxazine-2,4-dione that are useful as analgetic agents. These compounds are prepared by reacting an appropriate N-substituted salicylamide derivative with a ring closing agent.

3,751,415
2-NITRO-11-(1-PIPERAZINYL)-DIBENZ[b,f][1,4] OXAZEPINES

Jean Schmutz, Muri, and Fritz Hunziker and Franz Martin Kunzle, Bern, Switzerland, assignors to Sandoz-Wander, Inc.

No Drawing. Continuation-in-part of application Ser. No. 57,316, July 22, 1970, which is a continuation-in-part of application Ser. No. 797,281, Feb. 6, 1969, now Patent No. 3,546,226, dated Dec. 8, 1970, which in turn is a continuation-in-part of abandoned application Ser. No. 712,956, Mar. 14, 1968. This application Nov. 1, 1971, Ser. No. 194,514
Claims priority, application Switzerland, Mar. 22, 1967, 4,103/67
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **1 Claim**

2 - nitro-11-(1-piperazinyl)-dibenz[b,f][1,4]oxazepines and its pharmaceutically acceptable acid addition salts are useful as anti-depressants.

3,751,416
3-[2-(4-PHENYL-1-PIPERAZINYL)-ETHYL]INDOLINES

George Rodger Allen, Jr., Old Tappan, N.J., Francis Joseph McEvoy, Pearl River, N.Y., Vern Gordon De-Vries, Ridgewood, N.J., Daniel Bryan Moran, Suffern, N.Y., and Ruddy Littell, River Vale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 27, 1971, Ser. No. 147,700
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **8 Claims**

This disclosure describes compounds of the class of substituted 3 - [2-(4-phenyl-1-piperazinyl)ethyl]indolines useful as tranquilizing agents.

3,751,417
1-ACYL-3-(2-(4-PHENYL-1-PIPERAZINYL)ETHYL) INDOLINES

George Rodger Allen, Jr., Old Tappan, N.J., Francis Joseph McEvoy, Pearl River, N.Y., Vern Gordon De Vries, Ridgewood, N.J., Daniel Bryan Moran, Suffern, N.Y., and Ruddy Littell, River Vale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,319
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **10 Claims**

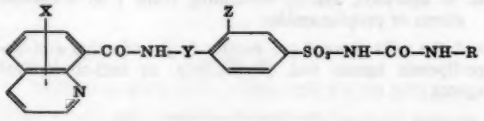
This disclosure describes compounds of the class of substituted 1-acyl-3-[2-(4-phenyl - 1 - piperazinyl)ethyl]indolines useful as intermediates for the preparation of tranquilizing agents.

3,751,418
BENZENESULFONYL-UREAS AND PROCESS FOR THEIR MANUFACTURE

Rudi Weyer, Frankfurt am Main, Walter Aumuller, Kelkheim, Taunus, Helmut Weber, Frankfurt am Main, Roland Schweitzer, Falkenstein, Taunus, and Ruth Heerdt, Mannheim, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 3, 1971, Ser. No. 149,745
Claims priority, application Germany, June 6, 1970, P 20 27 950.9
Int. Cl. C07c *33/48*
U.S. Cl. 260—283 SA **7 Claims**

Hypoglycemically active benzenesulfonyl-ureas of the formula



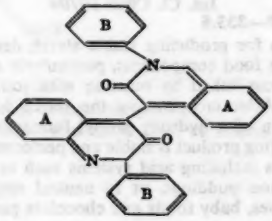
wherein X is hydrogen, chlorine, bromine, methoxy or methyl, Y is $-CH(CH_3)-CH_2-$, $-CH_2-CH(CH_3)-$ or $-CH_2CH_2-$, R is alkyl of 3 to 6 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, which may be substituted by 1 or 2 alkyl of up to 3 carbon atoms or by chlorine, cycloalkenyl of 5 to 8 carbon atoms, which may be substituted by 1 to 2 alkyl of up to 3 carbon atoms, bicycloalkyl or bicycloalkenyl of 7 or 8 carbon atoms, nortricyclyl, spiro[2,4]-heptyl, Z is hydrogen or a hydrocarbon radical of 1 or 2 carbon atoms which forms with Y a 5- or 6-membered ring, or the salts thereof as well as a process for their manufacture.

3,751,419
BI-ISOQUINOLINONE COMPOUNDS

Erich Ziegler, Graz, Austria, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,772
Claims priority, application Switzerland, Feb. 3, 1970, 1,465/70
Int. Cl. C07d *33/46*
U.S. Cl. 260—288 R **2 Claims**

Bi-isoquinolinones of formula:



(I)

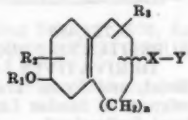
wherein the rings A and B can be further substituted by halogen, nitro, lower alkyl or lower alkoxy, and the rings A can contain a condensed benzene ring, are useful for coloring plastics in fluorescent yellow to red shades.

3,751,420
MONOOLMONOENE AMINES

Frederick P. Hauck, Somerville, Joseph E. Sundeen, Trenton, and Joyce A. Reid, Highland Park, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,437
Int. Cl. C07d *29/16*
U.S. Cl. 260—293.56 **6 Claims**

Monoolmonoene amines are provided having the structure



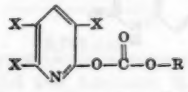
which are useful as analgetic muscle relaxants.

3,751,421
SUBSTITUTED 3,5,6-TRIHALO-2-PYRIDYL CARBONATES

Richard A. Nyquist, Midland, and Thomas L. Reder, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,434
Int. Cl. C07d *31/34*
U.S. Cl. 260—295 R **5 Claims**

3,5,6-trihalo-2-pyridyl carbonates corresponding to the formula



wherein each X is independently chlorine, fluorine or bromine and R represents:

(a) loweralkyl of 1 to 4 carbon atoms, inclusive, excepting the tert-butyl configuration;
(b) halo lower alkyl of 1 to 4 carbon atoms, inclusive;
(c) loweralkenyl of 2 to 4 carbon atoms, inclusive;
(d) loweralkynyl of 3 to 4 carbon atoms, inclusive;
(e) (loweralkoxyloweralkoxy)loweralkyl wherein the terminal loweralkoxy group contains from 1 to 4 carbon atoms, inclusive, the internal loweralkoxy group contains from 2 to 4 carbon atoms, inclusive, and the loweralkyl group contains from 2 to 4 carbon atoms, inclusive; their preparation and utility as fungicides and herbicides is disclosed.

3,751,422
PROCESS FOR PRODUCING BIPYRIDYLS

Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 24, 1970, Ser. No. 57,387
Claims priority, application Great Britain, July 8, 1969, 34,414/69
The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed
Int. Cl. C07d *31/02, 31/10*
U.S. Cl. 260—296 D **12 Claims**

A process for the manufacture of bipyridyls, known for their herbicidal properties, which comprises the step of reacting a corresponding substituted pyridine in the liquid phase with ammonia, optionally in the presence of a hydrogenation/dehydrogenation catalyst, to give bipyridyl or a piperidyl pyridine which is readily dehydrogenated to a bipyridyl.

3,751,423
TRICHLOROETHYLIDENE-AMINO-THIAZOLES

Pal Benko, Zoltan Budai, Laszlo Pallos, and Edit Berenyi, Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar

No Drawing. Original application Apr. 10, 1969, Ser. No. 815,238, now Patent No. 3,624,088. Divided and this application June 17, 1971, Ser. No. 154,178
Claims priority, application Hungary, Apr. 12, 1968, EE–1,505
Int. Cl. C07d *91/34*
U.S. Cl. 260—306.8 R **3 Claims**

Compounds of the formula

$$A—N=CH—CCl_3$$

wherein A is a thiazolyl-2 which may be unsubstituted or substituted by one nitro group or one or two methyl groups, and the pharmaceutically acceptable acid addition salts thereof.

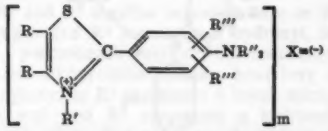
The new compounds exert anthelmintic and herbicidal activity.

3,751,424
THIAZOLIUM COMPOUND

Walter Reifschneider, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Oct. 27, 1966, Ser. No. 589,859, now Patent No. 3,511,850, dated May 12, 1970. Divided and this application Aug. 29, 1969, Ser. No. 869,429
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 R **4 Claims**

Compound which is a member selected from the group consisting of



wherein X represents a pharmaceutically-acceptable anion; R, each being taken separately, represents hydrogen or loweralkyl, or both R moieties, taken together, represent straight-chain alkylene being of from 3 to 6, both inclusive, carbon atoms; R′ represents primary loweralkyl; each R″ independently represents hydrogen or primary loweralkyl; each R‴ independently represents hydrogen, bromo, chloro, methoxy, or methyl; and *m* represents an integer equal to the valence of the anion X. The compounds are useful as agents for regulating the growth of plants.

3,751,425
1-METHYL-AND 1 - ETHYLTHIOETHYLCARBAMOYL-SUBSTITUTED BENZIMIDAZOLES

Hans Osieka, Ludwigshafen, Karl Heinz Koenig Frankenthal, and Gerhard Bolz and August Amann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 10, 1971, Ser. No. 122,995
Claims priority, application Germany, Mar. 14, 1970, P 20 12 219.4
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **4 Claims**

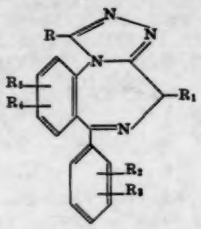
Benzimidazoles bearing, as substituents, a carbamoyl radical in the 1-position and a mercapto carboxylamino radical in the 2-position. The compounds are suitable (in appropriate pharmaceutical preparations) as agents for treating and curing fungus diseases and as prophylactics therefor.

3,751,426
1-SUBSTITUTED-6-PHENYL-4H-s-TRIAZOLO[4,3-a][1,6]BENZODIAZEPINE COMPOUNDS

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

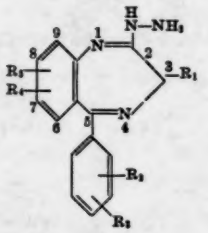
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,290
Int. Cl. C07d 57/02
U.S. Cl. 260—308 R 18 Claims

1 - substituted - 6 - phenyl-4H-s-triazolo[4,3-a][1,4] benzodiazepines of the Formula VII:



(VII)

wherein R is selected from the group consisting of thio, alkylthio, in which the alkyl group is of 1 to 3 carbon atoms, inclusive, amino, nitro, and fluoro; wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl as defined above, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl and alkylsulfonyl, in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, are produced by condensing a 5-phenyl-3H-1,4-benzodiazepin-2-yl hydrazine of the Formula I:



with thiophosgene ($SCCl_2$) to obtain a triazole of Formula VII above in which R is a thio group, or treating I with cyanogen bromide (BrCN) to give a compound of Formula VII wherein R is the amino group. Further conventional treatments produces the compounds in which R is an alkylthio or nitro group or fluoro.

The new products of Formula VII including their pharmacologically acceptable acid addition salts are useful as sedatives, tranquilizers and muscle relaxants in mammals and birds.

3,751,427
LOWERALKYL-N-(1-LOWERALKYL-5-NITRO-IMIDAZOLE-2-CARBONYL) CARBAMATES

David W. Henry, Menlo Park, Calif., and Dale R. Hoff, Basking Ridge, and Arthur A. Patchett, Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Feb. 19, 1969, Ser. No. 800,705, now Patent No. 3,632,817, dated Jan. 4, 1972. Divided and this application Feb. 12, 1971, Ser. No. 115,129
Int. Cl. C07d 49/36
U.S. Cl. 260—309 3 Claims

N-(1-loweralkyl-5-nitroimidazol-2-yl carbonyl) ureas and carbamates having antiprotozoal activity prepared by reaction of 1-loweralkyl-5-nitroimidazole-2-carboxamide with oxalyl halide and then with an appropriate alcohol or amine. The product compounds are useful as parasiticides.

3,751,428
1-SUBSTITUTED BENZOYL-2-TRIFLUORO-METHYLBENZIMIDAZOLES

Reinhard Sarges, Old Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Mar. 20, 1968, Ser. No. 714,416, now Patent No. 3,625,954, dated Dec. 7, 1971. Divided and this application Oct. 4, 1971, Ser. No. 186,446
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 4 Claims

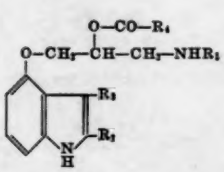
Selected 1-benzoylbenzimidazoles having at the 2-position hydrogen, CF_3, $-NHCOCF_3$, $-CH_2CH_2CO_2H$, methyl or pyridyl and 1-benzoylbenzotriazoles having utility as anti-inflammatory agents and the preparation thereof by acylation of the appropriate benzimidazole or benzotriazole with a benzoyl halide.

3,751,429
4-(3-AMINO-2-SUBSTITUTED PROPOXY) INDOLE DERIVATIVES

Fritz Seemann, Basel, and Franz Troxler, Bottmingen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 124,976, Mar. 16, 1971. This application Sept. 24, 1971, Ser. No. 183,631
Claims priority, application Switzerland, Mar. 24, 1970, 4,379/70; Sept. 30, 1970, 14,467/70
Int. Cl. C07d 27/56
U.S. Cl. 260—326.14 R 18 Claims

This invention concerns novel compounds of the formula:



wherein R_1 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenylalkyl of 8 to 12 carbon atoms wherein the phenyl radical is separated from the nitrogen atom by at least 2 carbon atoms, 1,1-dimethyl-2-propinyl or allyl, R_2 is hydrogen, methyl, carbamoyl, or carbamoyl mono- or disubstituted by alkyl of 1 to 4 carbon atoms, R_3 is hydrogen or methyl, and R_4 is alkyl of 1 to 17 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, cycloalkyl of 3 to 7 carbon atoms substituted by one or more alkyl substituents of 1 to 4 carbon atoms, phenyl, phenyl monosubstituted by methyl, methoxy, fluorine or chlorine, or chloroalkyl of 1 to 7 carbon atoms, and acid addition salts thereof.

The compounds possess adrenergic β blocker and antiarrythmic properties.

3,751,430
5-ACYL-2,3-DIHYDROBENZOTHIOPHENE-2-CARBOXYLIC ACIDS

Bernard Libis, Saint Louis la Chaussee, France, and Ernst Habicht, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application May 26, 1969, Ser. No. 827,941, now Patent No. 3,651,094, dated Mar. 21, 1972. Divided and this application Sept. 20, 1971, Ser. No. 182,164
Claims priority, application Switzerland, May 30, 1968, 8,030/68
Int. Cl. A61k 27/00; C07d 63/22, 5/34
U.S. Cl. 260—330.5 5 Claims

5-acyl-benzofuran-2-carboxylic, 5-acyl-benzothiophene-2-carboxylic acids and pharmaceutically acceptable salts

thereof with bases, which compounds have valuable diuretic and simultaneously saluretic as well as anti-tussive activities, therapeutic compositions containing such compounds as aforesaid or their pharmaceutically acceptable salts with bases as well as methods for producing simultaneously diuretic and saluretic effects and for inhibiting tussive irritation in mammals. Illustrative embodiments exhibiting primarily antitussive and simultaneous diuretic and saluretic effects respectively are 2,3-dihydro-5-butyryl-6-methyl-benzofuran-2-carboxylic acid and 2,3-dihydro-5-butyryl-6,7-dimethyl-benzofuran - 2 - carboxylic acid.

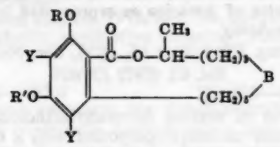
3,751,431

F.E.S. DERIVATIVES

Herbert L. Wehrmeister and Edward B. Hodge, Terre Haute, Ind., assignors to Commercial Solvents Corporation

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,880
Int. Cl. C07d 9/00
U.S. Cl. 260—343.2 F 6 Claims

New compounds are provided and have the formula



where B is >C=O, >CHOH or $>CH_2$; R and R' can be hydrogen, alkyl, acyl or aralkyl radicals; and Y is bromine. These compounds exhibit antibacterial activity and can be used in animal feed compositions.

3,751,432

TETRAHYDROPYRAN DERIVATIVE

Gottfried J. Brendel and Lawrence H. Shepherd, Jr., Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Application Oct. 5, 1970, Ser. No. 78,213, now Patent No. 3,692,847, which is a division of application Ser. No. 771,651, Oct. 29, 1968, now Patent No. 3,631,065. Divided and this application May 25, 1972, Ser. No. 257,050
Int. Cl. C07d 7/14
U.S. Cl. 260—345.1 1 Claim

Nonionic compounds in which an aluminum atom is part of an olefinically unsaturated ring system are prepared by causing interaction among aluminum, a conjugated diene and a hydrocarbon aluminum hydride in the presence of a suitable Lewis base such as 1,4-dioxane or N-methyl pyrrolidine. The resulting cyclic organoaluminum compound is useful in the synthesis of olefins and branched chain alkenols. Thus by subjecting the cyclic organoaluminum compound to hydrolysis, on or more olefins may be produced. To prepare branched chain alkenols, the cyclic organoaluminum compound is reacted with a cleavable cycloparaffinic monoether having a 3, 4 or 5-membered ring. Thereupon the reaction mixture is subjected to hydrolysis. The following novel compounds were prepared by this procedure.

1-chloromethyl-3,4-dimethyl-4-penten-1-ol
1-chloromethyl-3,3-dimethyl-4-penten-1-ol
2,2-bis(chloromethyl)-4,5-dimethyl-5-hexen-1-ol
2,2-bis(chloromethyl)-4,4-dimethyl-5-hexen-1-ol
1,5,5-trimethyl-6-hepten-1-ol
1,5,6-trimethyl-6-hepten-1-ol
4,5,6-trimethyl-6-hepten-1-ol
2,2,3-trimethyl-5,5-bis(chloromethyl)tetrahydropyran

3,751,433

2-HYDROXY-2-(3-ACYL-4-OXOALKYL)-6-VINYL-TETRAHYDROPYRANS AND TAUTOMERS

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 19, 1970, Ser. No. 4,026, now Patent No. 3,671,539. Divided and this application Mar. 29, 1972, Ser. No. 239,369
Int. Cl. C07d 7/04
U.S. Cl. 260—345.9 3 Claims

2-hydroxy-2-(3-acyl-4-oxoalkyl) - 6 - vinyltetrahydropyrans and tautomers thereof are intermediates useful in the preparation of pharmaceutically valuable steroidal compounds. Preparation of such compounds from 2-(2'-substituted aminoethyl)-2-hydroxy - 6 - vinyltetrahydropyrans and their alkyl substituted analogs are described.

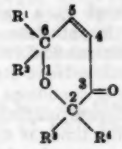
3,751,434

DERIVATIVES OF 2H-PYRAN-3(6H)-ONES

Yvon Lefebvre, Pierrefonds, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 78,196, Oct. 5, 1970, now Patent No. 3,657,226, which is a continuation-in-part of application Ser. No. 5,883, Jan. 26, 1970, now abandoned, which in turn is a continuation-in-part of application Ser. No. 748,196, July 29, 1968, now Patent No. 3,547,912. This application Apr. 7, 1971, Ser. No. 132,196
Int. Cl. C07d 7/10
U.S. Cl. 260—345.9 37 Claims

Compounds of the formula



in which R^1 and R^2 together represent oxo; or R^1 represents hydrogen and R^2 represents a hydroxyl, lower alkanoyloxy, p-nitrobenzoyloxy or chloroacetoxy, lower alkoxy, lower alkoxy(lower)alkoxy, benzyloxy or tetrahydropyranyloxy; or R^1 represents a lower alkyl, aryl or substituted aryl and R^2 represents a hydroxyl, lower alkoxy, lower alkoxy(lower)alkoxy, benzyloxy or tetrahydropyranyloxy; R^3 represents hydrogen and R^4 represents lower alkyl, substituted lower alkyl, cyclo(lower) alkyl, aryl, substituted aryl, aralkyl, substituted aralkyl; or R^3 and R^4 each represent hydrogen or the same or different organic radicals described above; or R^3 and R^4 together represent a carboxylic ring, attached in a spiral fashion to the 2H-pyran-3(6H)-one ring so that the carbon atom 2 of the pyranone ring is common to the carbocyclic ring. The compounds have antibacterial and antifungal activities, and methods for their preparation and use are also disclosed.

3,751,435

PROCESS FOR RECOVERY OF PIVALOLACTONE FROM POLYMERS THEREOF

Servaas van der Ven and Frederik L. Binsergen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,579
Claims priority, application Netherlands, Feb. 13, 1970, 7002062
Int. Cl. C07d 3/00
U.S. Cl. 260—343.9 9 Claims

Pivalolactone is recovered from polymers thereof by a process which comprises heating the polymer in the presence of a depolymerization catalyst at a temperature above 245° C. and a vapor pressure of said pivalolactone less than one atmosphere to form pivalolactone vapor, and rapidly condensing the pivalolactone vapor.

3,751,436

2,3-DIHYDRO - 5 - (2-METHYLENE-ALKANOYL)-BENZOFURAN - 2 - CARBOXYLIC ACID ALKYL AND CYCLOALKYL ESTERS

Ernst Habicht, Oberwil, Basel-Land, Switzerland, and Bernard Libis, Saint-Louis, France, assignors to Ciba-Geigy Corporation

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,207

Int. Cl. C07d *5/36*

U.S. Cl. 260—346.2 R 5 Claims

Compounds of the class of 2,3-dihydro-5-(2-methylene-alkanoyl)-benzofuran- and 2,3-dihydro-5-(2 - methylene-alkanoyl)-benzo[b]thiophene-2-carboxylic acid alkyl and cycloalkyl esters have diuretic and saluretic effects in mammals; pharmaceutical compositions containing said compounds and methods for producing a diuretic and saluretic effect in mammals comprising administering said compounds to said mammals are described; a typical embodiment is 2,3-dihydro-5-(2-methylene-butyryl)-6-methyl-benzofuran-2-carboxylic acid methyl ester.

3,751,437

BATCH AND CONTINUOUS PROCESS FOR PREPARING MENADIONE

Francis Huba, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed July 6, 1970, Ser. No. 52,361

Int. Cl. C07c *49/66*

U.S. Cl. 260—396 R 4 Claims

Menadione is prepared by a batch or a continuous process using 2-methylnaphthalene, a hexavalent chromium compound, a mineral acid, water, pyridine and, if desired, an inert organic solvent. Reactants are fed into the reactor at rates and conditions which provide continuous oxidation of 2-methylnaphthalene to menadione. The process produces five times as much product per unit volume of reactor space as a batch process under comparable conditions.

3,751,438

HYDROLYSIS OF 3-OXIMINO-$\Delta^{5(10)}$ STEROIDS

George R. Lenz, Glenview, and Raphael Pappo, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,551

Int. Cl. C07c *169/22*

U.S. Cl. 260—397.4 14 Claims

3-oximino-$\Delta^{5(10)}$ steroids are converted to the corresponding 3-keto-$\Delta^{5(10)}$ steroids by treatment with a titanium(III) or chromium(II) salt.

3,751,439

CRYSTALLINE NICKEL CHELATE OF 1-NITROSO-2-NAPHTHOL AND PROCESS FOR PRODUCING SAME

Richard Knight Putney, Hudson Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 24, 1972, Ser. No. 229,168

Int. Cl. C07f *15/04*; C08h *17/14*

U.S. Cl. 260—439 R 10 Claims

Pigmentary compositions comprising an intimate dispersion of a crystalline, light-stable nickel chelate of 1-nitroso-2-naphthol and from 0.10 to 1.0 mole, per mole of the nickel chelate, of certain ester plasticizers are described. The compositions have improved texture and dispersibility and are produced by wetting the hydrated nickel chelate of 1-nitroso-2-naphthol in aqueous medium with the plasticizer, isolating the wetted chelate and then heating the isolated product at 65–105° C. until dehydration is complete and the chelate is converted to its crystalline, light-stable form.

3,751,440

METAL COMPLEXES OF N,N-DIALKYLESTERS OF ETHYLENEDINITRILOTETRAACETIC ACID AND AND COMPOSITIONS STABILIZED THEREBY

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,307

Int. Cl. C07f *15/04*, *11/00*, *13/00*

U.S. Cl. 260—439 R 4 Claims

Synthetic polymeric compositions which are subject to ultraviolet light deterioration are stabilized by means of an effective amount of a metal complex of N,N'-alkyl esters of ethylenedinitrilotetraacetic acid. Polymeric compositions containing these stabilizers also exhibit an increase in susceptibility to dye as compared to the unstabilized polymeric compositions. A typical embodiment is the nickel complex, N,N'-di-n-octadecyl ester of ethylenedinitrilotetraacetic acid.

3,751,441

PREPARATION OF FERROCENYLBUTADIENES

Dennis C. Van Landuyt, Auburn, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed June 15, 1971, Ser. No. 153,442

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 CY 8 Claims

The process of making ferrocenylalkadienes by reacting a ferrocene carbonyl compound with a Grignard reagent to produce an alkenol, and then reacting the ferrocenylalkenol in a dehydration reaction in the presence of diamylhydroquinone, benzene, and copper sulfate pentahydrate. A ferrocenylalkadiene is recovered from this reaction. These ferrocenylalkadienes are used in the preparation of homopolymers for propellant applications, or they may be copolymerized with butadienes and used in solid propellant binders.

3,751,442

EXTRACTION OF UNSAPONIFIABLE FRACTIONS FROM NATURAL FATS

Alain Rancurel, Chartres, France, assignor to Laboratoires Pharmascience

No Drawing. Filed June 28, 1971, Ser. No. 157,706

Claims priority, application France, July 2, 1970, 7024542

Int. Cl. C11b *1/10*

U.S. Cl. 260—412.8 7 Claims

The invention relates to a new process for the extraction of the unsaponifiable fraction from natural fats.

3,751,443

METHOD OF PRODUCING ACRYLONITRILE

Khachik Egorovich Khchelan, prospekt Mira 148a, kv. 19; Olga Mikhailovna Revenko, ulitsa Chkalova 48a, kv. 53; Alla Nikolaevna Shatalova, Veernaya ulitsa 34, korpus 2, kv. 14; and Eleonora Grigorievna Gelperina, Schelkovskoe shosse 44, korpus 1, kv. 19, all of Moscow, U.S.S.R.

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,244

Claims priority, application U.S.S.R., Sept. 1, 1969, 1371589

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.9 5 Claims

A method of producing acrylonitrile by reacting acetonitrile with a lower saturated aliphatic hydrocarbon, such as methane, in the presence of oxygen or an oxygen-containing gas at a temperature of 600–1000° C.

3,751,444
PROCESS FOR THE PREPARATION OF 2,2-DIBROMO-2-CYANOACETAMIDE

Richard H. Solem and Lawrence D. Berg, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 26, 1971, Ser. No. 164,884
Int. Cl. C07c *121/02, 121/16*
U.S. Cl. 260—465.4 7 Claims

Disclosed is an improvement to the process of preparing 2,2-dibromo-2-cyanoacetamide by the acid catalyzed reaction of cyanoacetamide and bromine at a temperature no greater than 40° C. and HBr concentration no greater than 20%. The improvement involves oxidizing the by-product HBr in solution to bromine with a soluble bromate. The oxidation permits the reaction solution to be recycled thereby avoiding a waste disposal problem and increasing the yield of the desired product.

3,751,445
PREPARATION OF CYANACRYLIC ACID ESTERS

Wolfgang Imoehl, Unna Konigsborn, and Peter Borner, Altlunen, Germany, assignors to Schering AG, Bergkamen, Germany

Filed Jan. 26, 1972, Ser. No. 220,891
Claims priority, application Germany, Feb. 1, 1971, P 21 04 518.1
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.4 3 Claims

Method and apparatus for depolymerizing polycyanacrylates by continuous feeding into a heated depolymerization zone, for example by screw means, with continuous removal of depolymerization residues therefrom, again, for example, by screw means, and with collection of the monomer product in a cooled receiver.

3,751,446
PREPARATION OF ARYL-SUBSTITUTED ACETYLENIC COMPOUNDS

Richard F. Heck, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,920
The portion of the term of the patent subsequent to Sept. 8, 1987, has been disclaimed
Int. Cl. C07c *69/76, 15/02, 3/54*
U.S. Cl. 260—469 10 Claims

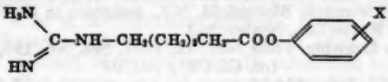
Aryl-substituted acetylenic compounds are prepared by reacting acetylene or an arylacetylene such as phenylacetylene with an organopalladium compound. The latter compound is prepared by reacting a palladium salt such as palladium acetate with a suitable organomercury, tin or lead compound as, for example, diphenylmercury, tetraphenyltin, tetraphenyllead, phenylmercuric acetate.

3,751,447
NOVEL GUANIDINOCAPROIC ACID PHENYL ESTERS AND THEIR PRODUCTION

Setsuro Fujii, Tokushima, and Tsuyoshi Watanabe, Nishinomiya, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,800
Claims priority, application Japan, Oct. 14, 1969, 44/82,103
Int. Cl. C07c *69/76, 101/24, 129/08*
U.S. Cl. 260—473 R 2 Claims

Novel quanidinocaproic acid phenyl esters of the formula



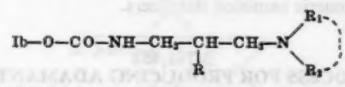
where X is, for example, hydrogen or halogen, and process for the production thereof, useful as antikallikrein, antitrypsin and antiplasmine agents.

3,751,448
BASICALLY SUBSTITUTED ISOBORNYL URETHANES

Georg Jager, Raunheim (Main), and Rolf Geiger and Roman Muschaweck, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,150
Claims priority, application Germany, Jan. 21, 1971, P 21 02 741.8; Dec. 4, 1971, P 21 60 237.9
Int. Cl. C07d *29/26*
U.S. Cl. 260—482 C 4 Claims

Basically substituted isobornyl urethanes of the General Formula I



(I)

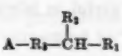
in which Ib represents the isobornyl radical, R represents hydrogen or the OH-group, R_1 and R_2 represent an alkyl radical having 1 to 4 carbon atoms or N, R_1, R_2 represent the pyrrolidino or piperidino radical and their salts with physiologically tolerated acids, having local anaesthetic action.

3,751,449
CYCLOALIPHATIC AND PHENYLALKYL ACRYLATES AND VINYL ESTERS

Ramsis Gobran, Roseville, and Hanspeter Knoepfel and Spencer F. Silver, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed June 26, 1969, Ser. No. 836,946
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 6 Claims

Carbocyclic alkyl acrylates and vinyl esters of the general formula:



where

A is acryloxy (CH_2=CHCOO—), methacryloxy

(CH_2=C(CH_3)COO—),

or carbovinyloxy (CH_2=CHOCO—), R_1 is a cycloaliphatic or aromatic group, R_2 is a hydrogen atom or lower alkyl, and R_3 is an alkylene having at least five carbon atoms,

are prepared, for example, by alcoholysis of lower alkyl acrylates with cycloaliphatic- or aromatic-substituted alkanols or by acylation of said alkanols with acryloyl or methacryloyl chloride, or by vinyl ester interchange of lower vinyl esters with cycloaliphatic- or aromatic-substituted alkanoic acids, said carbocyclic alkyl acrylates and vinyl esters being polymerizable monomers useful in forming polymers having utility, for example, as pressure sensitive adhesives.

3,751,450
SUBSTITUTED PHENYLCARBAMATES

Adolf Fischer, Mutterstadt, Albrecht Mueller, Frankenthal, and Guenter Hansen, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 25, 1971, Ser. No. 146,791
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 1 Claim

New and valuable substituted phenylcarbamates having a good herbicidal action and a process for controlling the growth of unwanted plants with these compounds.

3,751,451

MONOMERIC EMULSION STABILIZERS DERIVED FROM ALKYL/ALKENYL SUCCINIC ANHYDRIDE

Carlos M. Samour, Wellesley, and Mildred C. Richards, Wakefield, Mass., assignors to The Kendall Company, Walpole, Mass.

No Drawing. Continuation-in-part of application Ser. No. 867,900, Oct. 20, 1969. This application May 26, 1970, Ser. No. 40,718

Int. Cl. C07c *69/40*

U.S. Cl. 260—485 H 3 Claims

Quaternary ammonium salts having a lipophilic group covalently linked to the quaternary nitrogen through hydroxysuccinyloxy or hydroxysuccinylamino radicals are disclosed. These quaternary ammonium salts are useful as monomeric emulsion stabilizers.

3,751,452

PROCESS FOR PRODUCING ADAMANTYL ESTERS OF POLYHYDRIC ALCOHOLS

Yoshiaki Inamoto and Hirokazu Nakayama, Wakayama, Hidetsugu Takenaka, Arita, and Yoshitomo Kimura, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed July 20, 1971, Ser. No. 164,412

Claims priority, application Japan, July 24, 1970, 45/64,886

Int. Cl. C07c *61/12*

U.S. Cl. 260—468 G 6 Claims

A compound of the formula

$$R_mC(CH_3OCO(CH_3)_n\text{-}Ad)_{4-m}$$

wherein m is 0, 1 or 2; n is 0 or 1; "Ad" is adamantyl or alkyl-substituted adamantyl; and R is hydrogen, alkyl, cycloalkyl or aralkyl. The compound is prepared by esterifying a polyhydric alcohol of the formula

$$R_mC(CH_2OH)_{4-m}$$

with a carboxylic acid of the formula

$$Ad\text{-}(CH_2)_n\text{—}COOH$$

The compounds are useful as lubricants, plasticizers, viscosity improvers, etc.

3,751,453

ALPHA-ACYLOXYACETIC ACID PRODUCTION

Victor P. Kurkov, San Rafael, Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,516

Int. Cl. C07c *67/00*

U.S. Cl. 260—494 12 Claims

α - Acyloxyacetic acids are produced as the major product by the reaction of formaldehyde, a carboxylic acid and carbon monoxide in the presence of catalytic amounts of a Group VIII noble transition metal compound and an iodide promoter.

3,751,454

BIS-GUANIDIUM TETRACHLOROPHTHALATE AND TETRABROMOPHTHALATE AND PROCESS FOR MAKING SAME

Satoyuki Minami, Otsu-shi, Masateru Nakoji, Moriguchi-shi, and Toshikazu Aoki, Otsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 30, 1969, Ser. No. 795,252

Claims priority, application Japan, Feb. 12, 1968, 43/8,359

Int. Cl. C07c *123/00*

U.S. Cl. 260—501.14 1 Claim

Bis-guanidium tetrachlorophthalates and bis-guanidium tetrabromophthalates and processes for obtaining same by interaction of an inorganic acid salt of guanidine and tetrachlorophthalic anhydride or tetrabromophthalic anhydride or an alkali metal salt of tetrachlorophthalate or tetrabromophthalate.

3,751,455

METHOD OF PRODUCING 1,3-BIS(CARBOXYMETHYL) ADAMANTANES

Yoshiaki Inamoto and Hirokazu Nakayama, Wakayama, and Hidetsugu Takenaka, Arita, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,815

Claims priority, application Japan, Aug. 20, 1969, 44/65,826; Aug. 21, 1969, 44/66,152

Int. Cl. C07c *51/00*

U.S. Cl. 260—514 G 5 Claims

1,3-bis(carboxymethyl) derivatives of adamantane and alkyladamantanes are prepared in one step by the reaction of an adamantane, vinylidene chloride, and t-butyl alcohol in concentrated sulfuric acid in the presence of fuming sulfuric acid. The presence of fuming sulfuric acid is of absolute necessity because the second carboxymethyl group can not substantially be introduced into adamantane rings without fuming sulfuric acid.

3,751,456

DISPROPORTIONATION OF AROMATIC MONOCARBOXYLATES

Yu-Lin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 3, 1972, Ser. No. 231,709

Int. Cl. C07c *63/40, 63/32*

U.S. Cl. 260—515 P 4 Claims

Alkali metal salts of aromatic tricarboxylic acids are produced by the selective disproportionation of alkali metal salts of aromatic monocarboxylic acids in the presence of a cadmium iodide-sodium iodide catalyst system.

3,751,457

DISPROPORTIONATION OF ALKALI METAL SALTS OF AROMATIC CARBOXYLIC ACIDS

Stanley J. Marwil, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,279

Int. Cl. C07c *63/26*

U.S. Cl. 260—515 P 7 Claims

A slurry comprised of an alkali metal salt of an aromatic carboxylic acid, e.g. potassium benzoate, a disproportionation catalyst, e.g. zinc benzoate, and an inert high-boiling organic dispersant, e.g. a terphenyl, and activated carbon dispersed in the organic dispersant together with said salt and catalyst, are subjected to an elevated temperature in the presence of a gas atmosphere, e.g. carbon dioxide to form a polycarboxylate having at least one more carboxyl group than said salt.

3,751,458

CITROYLFORMIC ACID AND ITS PRODUCTION

Richard H. Wiley, New York, N.Y., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,379

Int. Cl. C07c *59/12*

U.S. Cl. 260—535 P 2 Claims

Citroylformic acid, useful as a sequestrant and as a raw material for the production of citric acid, can be produced by the bimolecular decarboxylative self-condensation of oxaloacetic acid.

3,751,459

L-TRANS-2-AMINO-4-(2-AMINOETHOXY)-3-BUTENOIC ACID

Julius Berger and David Pruess, Passaic, and James Parnell Scannell, Bloomfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 12, 1971, Ser. No. 198,449

Int. Cl. C07c *101/04*

U.S. Cl. 260—534 M 2 Claims

A new antimicrobial, anthelmintic substance, L-trans-2-amino-4-(2-aminoethoxy)-3-butenoic acid, prepared by a new species of Streptomyces is disclosed.

3,751,460

PROCESS FOR PREPARING ISOMERIC CYCLIC 5-MEMBERED UNSATURATED PHOSPHINE DIHALIDES

Reinhard Schliebs, Cologne, and Gerhard Jonas, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 19, 1971, Ser. No. 164,039
Claims priority, application Germany, July 21, 1970, P 20 36 173.3
Int. Cl. C07d *105/02*
U.S. Cl. 260—543 P 10 Claims

Isomeric cyclic 5-membered unsaturated phosphine dihalides are prepared by reacting organo-phosphine dihalides with dienes in an oxyhalide of pentavalent phosphorus as a solvent.

3,751,461

ALPHA CHLORINATION OF ACID CHLORIDES

Yog R. Dhingra, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of applications Ser. No. 86,338, Nov. 2, 1970, and Ser. No. 126,355, Mar. 19, 1971. This application Nov. 29, 1971, Ser. No. 203,043
Int. Cl. C07c *51/58, 53/20, 55/02*
U.S. Cl. 260—544 Y 7 Claims

Acid chlorides are chlorinated in the alpha position by reacting the acid chloride with chlorine in the presence of a catalyst of an alkylpyridine or tetraalkylammonium halide.

3,751,462

PROCESS FOR PREPARATION OF SUBSTITUTED FLUOROMETHANESULFONANILIDES

Kelly T. McGurran, Roseville, and Elden H. Banitt, Woodbury, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,230
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 A 6 Claims

A novel process for the synthesis of the compound 2-hydroxy-5-[1-hydroxy - 2 - (4'-methoxyphenethylamino) propyl]fluoromethanesulfonanilide and its salts, together with certain novel intermediates, is described.

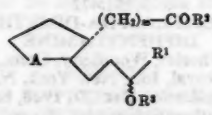
3,751,463

CYCLOPENTANE DERIVATIVES

Michael Peter Lear Caton, Upminster, Trevor Parker, Romford, and Gordon Leonard Watkins, Dagenham, England, assignors to May & Baker Limited, Dagenham, England

No Drawing. Filed May 26, 1971, Ser. No. 147,273
Claims priority, application Great Britain, May 27, 1970, 25,486/70
Int. Cl. C07c *103/86*
U.S. Cl. 260—557 R 4 Claims

Compounds of the formula:



wherein A represents carbonyl or a group —CH(OR³)—, R¹ represents alkyl, cycloalkyl or cycloalkyl-alkyl, *m* represents 4 or 6, R² represents hydroxy, alkoxy, amino, monoalkylamino, dialkylamino or, except when A represents carbonyl, hydrazino optionally substituted by one or two alkyl groups, and R³ represents hydrogen, alkyl, or when R² represents hydroxy or alkoxy, an alkanoyl group, and when A represents a group —CH(OR³)— the symbols R³ both represent hydrogen atoms or identical groups, possess pharmacodynamic properties, in particular hypotensive activity and reduction in gastric acid secretion.

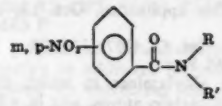
3,751,464

N-SUBSTITUTED-N'-CYCLOALKYL-NITROBENZAMIDES

William D. Roll, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,674
Int. Cl. C07c *103/30*
U.S. Cl. 360—558 R 9 Claims

Simultaneously acting central nervous system (CNS) depressants and blood pressure depressors of the formula



wherein R is selected from the group consisting of alkyl, hydroxyalkyl, cyanoalkyl, aryl, aralkyl, and hydroxyaralkyl radicals; and wherein R' is selected from the group consisting of cycloaliphatic radicals containing between three and seven carbon atoms.

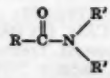
3,751,465

PREPARATIONS OF N,N-DIALKYL-SUBSTITUTED FATTY AMIDES FROM NITRILES AND ALCOHOLS AND N,N-DIALKYLFORMAMIDES FROM HYDROGEN CYANIDE AND ALCOHOLS

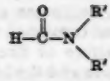
Yasunobu Takahashi, Yohei Fukuoka, Katuyoshi Sasaki, and Saburo Senoo, Tokyo, Japan, assignors to Asahi Kassi Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 748,165, July 29, 1968. This application Dec. 22, 1970, Ser. No. 100,837
Int. Cl. C07c *103/08*
U.S. Cl. 260—561 R 9 Claims

Novel process for the preparation of N,N-dialkyl-substituted fatty amides represented by the general formula



wherein R is an alkyl radical having 1 to 6 carbon atoms and R' is an alkyl radical having 1 to 4 carbon atoms, which comprises reacting at a temperature in the range of 50 to 1000° C. under pressure a nitrile represented by the general formula R—CN, wherein R has the same meaning as defined above, with an alcohol represented by the general formula R'—OH, wherein R' has the same meaning as defined above, the alcohol being employed in an amount in the range of from 1.5 to 10 moles of alcohol per mole of the nitrile, with or without employing a catalyst, and recycling at least a part of the by-products of the reaction to the starting reaction mixture. Thereby, the N,N-dialkylamides can be produced in high yield. And, a novel process for the preparation of N,N-dialkylformamides represented by the general formula



wherein R' is an alkyl radical having 1 to 4 carbon atoms, which comprises reacting at a temperature in the range of 50 to 1000° C. under pressure hydrogen cyanide, which is utterly different in chemical behavior from the nitrile, with an alcohol represented by the general formula

R'—OH, wherein R' has the same meaning as defined above, the alcohol being employed in an amount in the range of from 1.5 to 10 moles of alcohol per mole of the hydrogen cyanide, with or without employing a catalyst. In the latter process also, the yield may advantageously be improved by recycling at least a part of the by-products of the reaction.

3,751,466
N-BENZYLIDENE ALKYLAMINES

Raphael Menasse and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 708,807, Feb. 28, 1968, which is a continuation-in-part of application Ser. No. 512,811, Dec. 9, 1965, now abandoned. This application Oct. 12, 1970, Ser. No. 80,148

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 F **3 Claims**

N-benzylidene alkylamines in which the alkyl group has from 8 to 18 carbon atoms, and in which the phenyl moiety is optionally substituted, are fungicidal agents. Compositions containing these compounds are fungicides and methods for combatting fungi use these compounds.

3,751,467
PREPARATION OF LIQUID-CRYSTAL COMPOUNDS

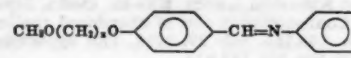
Heinz J. Dietrich and Edward L. Steiger, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Filed May 19, 1971, Ser. No. 145,028

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 F **3 Claims**

There is disclosed the preparation of liquid-crystal compounds of the structure:



where x equals 2 to 10, typically 2 to 5. The compounds are prepared by the reaction of para-n-butylaniline and para-methoxyalkyleneoxybenzaldehyde.

3,751,468
OXIMINO CYCLIC HYDROCARBONS

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Aug. 20, 1971, Ser. No. 175,780

Int. Cl. C07c *131/08*

U.S. Cl. 260—566 A **1 Claim**

A method for manufacturing oximino cyclic hydrocarbons by dehydrohalogenation of oximino halo cyclic hydrocarbons and novel compositions obtained thereby are disclosed.

Oximinocyclododecatrienes are prepared by the dehydrohalogenation of oximinochlorocyclododecadiene in the presence of a basic dehydrohalogenating agent. In one embodiment dehydrohalogenation in the presence of an organic amine yields a product having a melting point of about 165–166° C. In another embodiment, using an inorganic base such as potassium hydroxide in tertiary butanol yields a product having a melting point of from about 80°–85° C. which is a stereoisomer.

The unsaturated oximes obtained are hydrogenated under mild reaction conditions to yield a saturated oxime which is subjected to a Beckmann rearrangement to yield a lactam and the lactam converted to a polyamide which is used in the manufacture of fibers, filaments, molded articles such as containers and the like.

The oxime is hydrolyzed in the presence of an accepter for the hydroxyl amine produced as a by-product of the hydrolysis to give either a saturated or unsaturated ketone depending on whether a saturated or unsaturated oxime is used as the starting material. Both the saturated and unsaturated ketones are useful as fragrance materials.

3,751,469
METHOD OF PREPARING FLUORO-PERHALOAZAOLEFINS

Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, N.J., and Wilhelmus M. Beyleveld, Deventer, Netherlands, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 9, 1971, Ser. No. 161,336

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 R **9 Claims**

Fluoroperhaloazaolefins are prepared by reacting a fluoroperhaloalkyl isocyanate with a fluoroperhaloalkoxide. For example, perfluoro-2,4-dimethyl-3-aza-2-pentene is prepared by reacting hexafluoroisopropyl isocyanate with potassium heptafluoroisopropoxide. The fluoroperhaloazaolefins are useful as liquid dielectrics and as intermediates in the preparation of other fluorinated organic compounds.

3,751,470
N,N-DIALKYL-2-[2-(2-CYCLOALKYLVINYL) PHENOXY]ALKYLAMINES

Peter E. Cross, Canterbury, James R. Stichbury, Harbledown, near Canterbury, and Eric F. Thorpe, Birchington, England, and Neil M. Scollick, New London, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,253

Claims priority, application Great Britain, Mar. 13, 1970, 12,111/70

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 **5 Claims**

Ortho-substituted phenoxyalkylamines having gastric anti-secretory activity are prepared. A typical embodiment is N,N - diethyl-2-[2-(2-cyclohexylvinyl)phenoxy]ethylamine.

3,751,471
N-HYDROXYBENZYL-α,α'-XYLENE-DIAMINES

Wilhelm Becker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed June 12, 1970, Ser. No. 45,898

Claims priority, application Switzerland, June 19, 1969, 9,601/69

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.5 P **3 Claims**

The invention relates to improved phenols and to their use as cross-linking agents for epoxy compounds. Hitherto known cross-linking agents of this type are, however, highly viscous and must be diluted prior to use and this causes some deterioration of the properties of the plastic produced. Furthermore, some of the coatings made with these cross-linking agents are attacked by acids and form a white layer when wetted with water. In addition, their mechanical properties are not satisfactory. The invention has the object of eliminating the above mentioned defects of coatings or compounds of epoxy resins, by reacting special diamines, first with aldehydes, and then with a C—H acid compound.

3,751,472
2,4,4'-TRIS-(ALPHA,ALPHA-DIMETHYLBENZYL) DIPHENYLAMINE

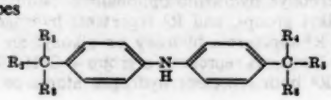
Edward L. Wheeler, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

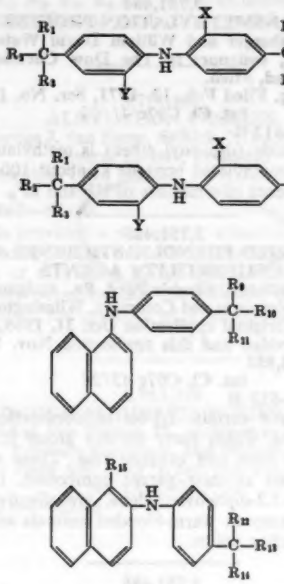
No Drawing. Application Dec. 27, 1968, Ser. No. 787,577, which is a continuation-in-part of application Ser. No. 540,817, Apr. 7, 1966, now Patent No. 3,505,225. Divided and this application July 19, 1971, Ser. No. 164,144

Int. Cl. C07c *87/28*

U.S. Cl. 260—570 R **1 Claim**

Derivatives of diphenylamine or phenylnaphthylamine of the types





where R_1, R_9 and R_{12} are phenyl or p-tolyl groups and the remaining R's, X and Y may be alkyl or various other substitutents, are useful antioxidants for lubricating oils or for various polymeric substrates (e.g. polypropylene) especially in combination with a dialkyl thiodipropionate. A typical antioxidant is 4,4'-bis(alpha,alpha,p-trimethylbenzyldiphenylamine made by reacting p-alpha-dimethylstyrene with diphenylamine.

3,751,473

PROCESS FOR FLUORINATING NITROAROMATIC MONOAMINES

Marion E. Hill and Donald L. Ross, Palo Alto, and Clifford L. Coon, Fremont, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed July 29, 1968, Ser. No. 748,569

Int. Cl. C07c *85/00, 87/22*

U.S. Cl. 260—577 5 Claims

The invention comprises the fluorination of amine-substituted nitro compounds (to produce the corresponding fluoramine-substituted nitro compounds), which fluorination is effected by dissolving the amine-substituted nitro compound in liquid hydrogen fluoride or acetonitrile, and passing fluorine, either as such or mixed with an inert gas, such as nitrogen or helium, to effect substitution of fluorine atoms for the amine hydrogen atoms.

3,751,474

METHOD OF PREPARING NONTOXIC POLYAMINES

Kenneth G. Phillips, River Forest, and Marcellus J. Geerts, Mount Prospect, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,612

Int. Cl. C07c *85/04, 87/20*

U.S. Cl. 260—583 P 2 Claims

A method of preparing novel polyethylene polyamines from the reaction of ammonia and ethylene dichloride is shown. The products have a high molecular weight and are preparing using a mole ratio of ammonia to ethylene dichloride of more than 2.6:1. The polyamines are substantially nontoxic to fish in contrast to standard polyamines.

3,751,475

PROCESS FOR THE PREPARATION OF POLYISOBUTENYL-SUBSTITUTED TETRAETHYLENEPENTAMINE

Henricus G. P. van der Voort and Willem P. de Jong, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 21, 1971, Ser. No. 145,938

Claims priority, application Netherlands, May 21, 1970, 7007392

Int. Cl. C07c *85/04, 87/20*

U.S. Cl. 260—583 P 5 Claims

Hydrocarbyl polyamines exhibit improved detergent/dispersant properties as additives for lubricants and fuel oils when prepared by extracting the reaction product of a polyolefinic chlorohydrocarbon and an alkylenepolyamine with a liquid methanol or ethanol solution.

3,751,476

BIS(2-FLUORO-2,2-DINITROETHYL) NITROSAMINE

Horst G. Adolph, Beltsville, and Mortimer J. Kamlet, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Jan. 29, 1970, Ser. No. 12,521

Int. Cl. C07c *111/00*

U.S. Cl. 260—583 CC 1 Claim

Bis(2-fluoro-2,2-dinitroethyl)nitrosamine is prepared by reacting bis(2-fluoro-2,2-dinitroethyl)amine with nitrosylsulfuric acid or any similar nitrosating agent. This compound is used as a plasticizer and an explosive.

3,751,477

PREPARATION OF HYDROPEROXIDES

Donald L. Roberts, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,072

Int. Cl. C07c *49/43*

U.S. Cl. 260—586 B 6 Claims

Acyclic or cyclic methyl substituted trisubstituted olefins treated with triarylphosphite-ozone adducts yield α-methylene hydroperoxides.

3,751,478

PREPARATION OF 1,2-CYCLOHEXANEDIONE

Michael A. Tobias, Edison, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,487

Int. Cl. C07c *49/27*

U.S. Cl. 260—586 R 2 Claims

2,3-epoxycyclohexanone is rearranged catalytically to 1,2-cyclohexanedione. Dehydrogenation of 1,2-cyclohexanedione produces catechols.

3,751,479

OXO-SUBSTITUTED ALIPHATIC HYDROCARBONS

Norman E. Liddell, Gainesville, Fla., and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 61,397, Aug. 4, 1970. This application Oct. 28, 1970, Ser. No. 84,870

Int. Cl. C07c *49/20*

U.S. Cl. 260—593 R 10 Claims

Novel oxo-substituted aliphatic compounds and intermediates therefor useful for the control of insects.

3,751,480

PREPARATION OF AROMATIC ALDEHYDES AND THE CORRESPONDING ALCOHOLS

Jean-Claude Brunie, Michel Costantini, and Noel Crenne, Lyon, and Michel Jouffret, Villeurbanne, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Mar. 3, 1970, Ser. No. 16,214
Claims priority, application France, Jan. 14, 1970, 7001234
Int. Cl. C07c *45/00*
U.S. Cl. 260—599 9 Claims

Mixtures of aromatic aldehydes with their corresponding alcohols, and consisting predominantly of the aldehyde, are produced by decomposing the corresponding aromatic hydroperoxide in the presence of a metal salt the cation of which exhibits Brönsted acidity in aqueous solution or oxide which exhibits Brönsted acidity in aqueous solution.

3,751,481

PROCESS FOR THE PRODUCTION OF TERTIARY PHOSPHINES

Kurt Weinberg, Upper Saddle River, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 1, 1971, Ser. No. 203,829
Int. Cl. C07f *9/02*
U.S. Cl. 260—601.5 P 8 Claims

A process for the production of tertiary phosphines which comprises contacting an aryl phosphine halide with powdered sodium, and thereafter reacting the product of said reaction with a hydrocarbyl halide, both of said reactions being conducted in an oxygen-free environment at a temperature and for a period of time sufficient to produce tertiary phosphines.

3,751,482

PROCESS FOR THE PRODUCTION OF TERTIARY PHOSPHINE OXIDES

Kurt Weinberg, Upper Saddle River, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 1, 1971, Ser. No. 203,826
Int. Cl. C07f *9/02*
U.S. Cl. 260—606.5 P 10 Claims

A process for the production of tertiary phosphine oxides which comprises contacting a suitable arylphosphine halide with powdered sodium in an oxygen-free atmosphere and thereafter reacting the product of said reaction with a suitable hydrocarbyl halide in an oxygen-containing atmosphere.

3,751,483

PHENOLIC THIOETHERS AND PROCESS FOR PREPARING SAME

Merle E. Cisney, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

No Drawing. Filed Oct. 13, 1971, Ser. No. 188,437
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F 7 Claims

Phenolic thioethers wherein the sulfur atom on the phenolic nucleus is attached to an aliphatic, alicyclic or aralkyl group of 2 to 18 carbon atoms are prepared by a reaction of metathesis whereby groups of this character, as incorporated in an organic halide, can be substituted for those of a lower character, whether saturated or unsaturated, attached to the sulfur atom on a starting phenolic thioether compound. Typically, phenolic thioethers can be prepared by refluxing methylthio-phenol with an organic halide the reaction going to completion as the low-boiling methyl chloride co-reaction product is distilled off, as it is formed, from the reaction zone. Various novel alkylthio-phenol compounds are prepared wherein the alkyl group contains an ether linkage or a hydroxy or a carboxy group. The phenolic thioethers prepared by the present invention have utility as antioxidants and as pesticides, they being variously useful as insecticides, herbicides and bactericides, and are useful as monomers in polymer formation.

3,751,484

TRANSMETHYLATION PROCESS

Noland Poffenberger and William David Watson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,098
Int. Cl. C07c *41/00*
U.S. Cl. 260—612 R 6 Claims

Diphenyl oxide (diphenyl ether) is methylated by reaction with a methylated benzene at about 100–200° C. and in the presence of a mixture of HF and BF_3.

3,751,485

MODIFIED PHENOLIC STILBENES AS ANTIFERTILITY AGENTS

William J. Middleton, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Oct. 31, 1969, Ser. No. 873,124. Divided and this application Nov. 15, 1971, Ser. No. 198,952
Int. Cl. C07c *43/28*
U.S. Cl. 260—612 R 4 Claims

Described are certain 1,1-bis(trifluoromethyl)-2,2-diphenylethylenes, which carry an oxy group in the para position of at least one benzene ring. These new compounds, as well as their parent compound, 1,1-bis(trifluoromethyl)-2,2-diphenylethylene, are effective in preventing pregnancy in warm-blooded animals and can be administered after coitus.

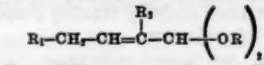
3,751,486

ALKYL-SUBSTITUTED UNSATURATED ACETALS

Alfred A. Schleppnik, St. Louis, Mo., and John B. Wilson, North Brunswick, N.J., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,584
Int. Cl. C07c *43/30*
U.S. Cl. 260—615 A 6 Claims

Alkyl-substituted unsaturated acetals of the formula



wherein R, R_1 and R_2 represent lower alkyl groups, are prepared by reacting an alpha, beta-unsaturated aldehyde with a lower alkanol in the presence of the corresponding alkyl ester selected from the group consisting of trialkyl orthoformates, tetraalkyl orthosilicates and dialkyl sulfites and a catalytic amount of ammonium nitrate. The compounds have very pleasant strong green, floral, woody odors and are useful as components in fragrance compositions.

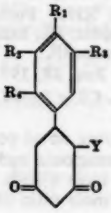
3,751,487

ALKOXY SUBSTITUTED-2,2'-BIPHENYL-DIMETHANOLS

Arnold Brossi, Verona, and Benjamin Pecherer, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 559,383, June 22, 1966. This application Dec. 11, 1969, Ser. No. 884,327
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 R 2 Claims

Substituted dibenzo[c,e]azepines and dibenzo[d,f] azonines, prepared through various sequential intermediates, for example, starting with a compound of the formula



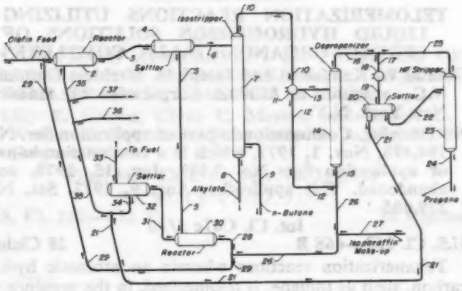
IV

wherein R_1, R_2, R_3, R_4 and Y are as defined hereinafter, are described. The end products are useful as hypotensive agents.

3,751,488
ALKYLATION PROCESS
Bernardus J. van Sorge, Selkirk, N.Y., assignor to General Electric Company
No Drawing. Filed July 22, 1970, Ser. No. 57,335
Int. Cl. C07c *39/06*
U.S. Cl. 260—621 R 10 Claims

There is provided a process for selectively alkylating a phenolic compound in the ortho-position to the significant reduction of alkylation in the meta- and para-positions which comprises alkylating the phenolic compound with an alkanol in the presence of a molybdenum-containing catalyst.

3,751,489
HYDROGEN FLUORIDE PURIFICATION
Jay E. Sobel, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Apr. 5, 1971, Ser. No. 131,235
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.48 11 Claims



A process for producing an alkylate product from an isoparaffin and an olefin, utilizing hydrogen fluoride catalyst, in which process the catalyst and reactants are admixed in an alkylation zone, the effluent from the alkylation zone is separated to provide a hydrocarbon stream and a catalyst stream, the alkylate product is recovered in the hydrocarbon stream, the catalyst stream is contacted with a second portion of the isoparaffin in a second alkylation zone, and the effluent from the second alkylation zone is separated to provide a second hydrocarbon stream and a second catalyst stream.

3,751,490
NITROSOBENZENE STABILIZED WITH HEAVY METAL COMPOUNDS
David Dodman, Malcolm Wilkins, and John Mathers Woolley, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Jan. 25, 1972, Ser. No. 220,703
Claims priority, application Great Britain, Feb. 22, 1971, 5,095/71
Int. Cl. C07c *81/02*
U.S. Cl. 260—647 6 Claims

C-nitroso compounds, especially nitrosobenzene, are stabilized by the addition of compounds such as salts or chelates of heavy metals, especially manganese, copper or cobalt.

3,751,491
BIS(TRIFLUOROMETHYL)BENZOIC ACIDS
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of application Ser. No. 703,880, Feb. 8, 1968. This application Apr. 10, 1970, Ser. No. 27,459
Int. Cl. C07c *25/14*
U.S. Cl. 260—651 F 2 Claims

Bis(trifluoromethyl)benzoic acids, e.g., 2,4 - bis(trifluoromethyl)benzoic acid, are prepared by reacting bis-(trifluoromethyl)benzene with alkyl lithium and treating the resulting product with carbon dioxide. The resulting benzoic acids are useful as central nervous system depressants and agrochemical agents.

3,751,492
PREPARATION OF SODIUM AND POTASSIUM FLUOROETHYLENES
Serge Y. Delavarenne, Wemmel, Belgium, assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Dec. 18, 1970, Ser. No. 99,710
Int. Cl. C07c *21/18*
U.S. Cl. 260—653.3 8 Claims

Sodium fluoroethylenes and potassium fluoroethylenes are conveniently prepared by a process which comprises reacting fluoroethylenes containing at least one hydrogen with sodium amide or potassium amide respectively, in a reaction media comprised of hexamethylphosphoramide and either tetrahydrofuran or an ether. The resulting fluoroethenyl compounds, especially the trifluorovinyl derivatives, are intermediates for the preparation of fluorovinyl monomers and insecticides.

3,751,493
ISOMERISATION PROCESS
Clifford William Capp, Ewell, and Peter John Nicholas Brown, Epsom, England, assignors to BP Chemicals Limited, London, England
No Drawing. Filed Feb. 18, 1971, Ser. No. 116,666
Claims priority, application Great Britain, Feb. 19, 1970, 7,931/70
Int. Cl. C07c *21/04*
U.S. Cl. 260—654 R 2 Claims

Dichlorobutenes are isomerised in the presence of a catalyst composition comprising copper naphthenate and a nitro-compound as promoter.

3,751,494
PURIFICATION OF CHLORINATED HYDROCARBONS EMPLOYING MOLECULAR SIEVES
Norman L. Beckers, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Filed Mar. 8, 1971, Ser. No. 122,088
Int. Cl. C07c *21/12*
U.S. Cl. 260—654 S 2 Claims

Saturated, partially-chlorinated, hydrocarbons, such as partially-chlorinated ethanes, are removed from unsaturated chlorocarbon and chlorinated hydrocarbons, such as perchloroethylene, by treatment with type 13X molecular sieves. In this manner saturated, partially-chlorinated, hydrocarbons are dehydrochlorinated and the products of dehydrochlorination are at least partially adsorbed. Any remaining dehydrochlorination products may be subsequently separated by fractional distillation.

3,751,495
PREVENTION OF DISCOLORATION IN VINYLIDENE CHLORIDE
Dietmar Seyferth, Lexington, Mass., assignor to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Aug. 8, 1969, Ser. No. 848,753
Int. Cl. C07c *21/00*
U.S. Cl. 260—654 S 6 Claims

Discoloration of vinylidene chloride monomer due to dichloroacetylene is prevented by treatment with phosphines and esters of phosphoric or phosphorous acid.

3,751,496

PROCESS FOR PREPARING DICHLOROBUTENE

Naoyuki Todo, Tokyo, Hiroyuki Hagiwara, Funabashi-shi, and Minoru Kurita and Toshio Sato, Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,346

Claims priority, application Japan, Aug. 7, 1968, 43/55,501

Int. Cl. C07c *21/00*

U.S. Cl. 260—654 A 9 Claims

A process for preparing dichlorobutene which comprises reacting together butadiene, hydrogen chloride and oxygen at a temperature of 80° C. to 300° C. in the presence of a catalyst consisting of a copper salt, phosphoric acid and an alkali chloride or of a copper salt and an alkali metal phosphate which catalyst is supported on a carrier.

3,751,497

PROCESS FOR THE PRODUCTION OF CYCLOPENTENE FROM CYCLOPENTADIENE

Wulf Schwerdtel, Cologne, Wolfgang Swodenk, Odenthal-Globusch, and Peter Woernle, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 21, 1971, Ser. No. 145,914

Claims priority, application Germany, May 25, 1970, P 20 25 411.9

Int. Cl. C07c *13/12, 5/16*

U.S. Cl. 260—666 A 8 Claims

The process for the production of cyclopentene from cyclopentadiene which comprises partially hydrogenating cyclopentadiene with molecular hydrogen in the gas phase at a temperature of about 50 to 300° C. in the presence of a novel catalyst comprising a support and, as active material, by weight of the catalyst, about 0.1 to 2% of palladium and about 0.2 to 2% of chromium, titanium or mixtures thereof.

3,751,498

PREPARATION OF n-ALKYLBENZENES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 12, 1972, Ser. No. 252,786

Int. Cl. C07c *15/02*

U.S. Cl. 260—668 D 10 Claims

Benzene compounds containing an alkyl substituent which is normal in configuration are prepared by alkylating cyclohexane with 1-alkenes in the presence of a free-radical generating compound and hydrogen chloride and thereafter dehydrogenating the n-alkylcyclohexane in the presence of a dehydrogenation catalyst to form the desired n-alkylbenzenes.

3,751,499

HYDROGENATION PROCESS

James J. Tazuma, Stow, Vipin M. Kothari, Akron, and Robert A. Kumse, Barberton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed May 5, 1972, Ser. No. 250,802

Int. Cl. C07c *3/00*

U.S. Cl. 260—666 A 8 Claims

This invention is an improvement in the process whereby cyclopentadiene is continually reduced to cyclopentene by passing the hydrocarbon along with hydrogen over a catalyst comprising palladium on alumina at temperatures from about −10° C. to about 150° C. and pressures from about 0 pounds per square inch to about 1000 pounds per square inch gauge (p.s.i.g.), the improvement being that the reactor is flooded with the cyclopentadiene hydrocarbon.

3,751,500

HYDROGENATED INDANE DERIVATIVES AND PROCESSES FOR PRODUCING SAME

John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Original application Aug. 18, 1969, Ser. No. 851,086, now Patent No. 3,636,176. Divided and this application Feb. 16, 1971, Ser. No. 115,834

Int. Cl. C07c *13/46*

U.S. Cl. 260—666 PY 6 Claims

A hydrogenated indane derivative having the formula:

wherein the dashed lines represent single or double bonds, no more than two of the dashed lines represent double bonds and, when two double bonds are present, such bonds being unconjugated; perfume compositions containing such indanes; and processes for producing same.

3,751,501

TELOMERIZATION REACTIONS UTILIZING LIQUID HYDROCARBON SOLUTIONS OF CERTAIN ORGANOMETALLIC COMPLEXES

Conrad W. Kamienski and Joseph H. Merkley, Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 194,498, Nov. 1, 1971, which is a continuation-in-part of application Ser. No. 3,189, Jan. 15, 1970, now abandoned. This application Aug. 9, 1972, Ser. No. 279,005

Int. Cl. C07c *3/10*

U.S. Cl. 260—668 B 28 Claims

Telomerization reactions wherein an aromatic hydrocarbon, such as toluene, is telomerized, in the presence of catalyst mixture or complex comprising, by way of illustration, (a) n-butylsodium or n-butylpotassium and (b) alkyllithiums such as n-butyllithium, by the gradual and controlled addition of monomers such as conjugated dienes and/or vinyl-substituted aromatic compounds, whereby to produce novel liquid resinous telomers.

3,751,502

HYDROCARBON ISOMERIZATION PROCESS

John C. Hayes, Palatine, Roy T. Mitsche, Island Lake, Richard E. Rausch, Mundelein, and Frederick C. Wilhelm, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application July 17, 1970, Ser. No. 56,008, which is a continuation-in-part of application Ser. No. 34,539, May 4, 1970, now Patent No. 3,660,309. Divided and this application Mar. 8, 1972, Ser. No. 232,905

Int. Cl. C07c *5/22*

U.S. Cl. 260—668 A 18 Claims

Isomerizable hydrocarbons such as paraffins, cycloparaffins, olefins and alkyl aromatics are isomerized by utilizing a catalytic composite containing catalytically effective amounts of a platinum group component and a Group IV–A metallic component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate such as mordenite. Also disclosed is a catalytic composite comprising a platinum group component, a Group IV–A metallic component and a Friedel-

Crafts metal halide component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate.

3,751,503

PRODUCTION OF BENZENE

Roy John Sampson, Christopher Buxton Spencer, and John Garfield Chenoweth, all of Norton Hall, The Green, Norton, Stockton-on-Tees, Teesside, England

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,773
Claims priority, application Great Britain, Mar. 26, 1971, 7,912/71
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 R 11 Claims

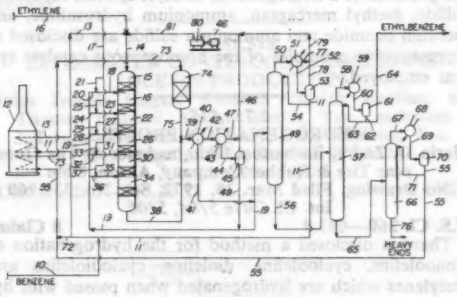
Alkyl aromatic hydrocarbons, for example toluene, are dealkylated to yield benzene and hydrogen in the presence of steam, and optionally, hydrogen over a Group VIII noble metal catalyst supported on alpha-alumina. The products of the reaction are phase separated to yield an organic fraction from which benzene is separated, the remainder of the fraction comprising unchanged and/or other aromatic hydrocarbons being recycled as feed material for continued dealkylation. The process may be used to increase the aromatics content and to increase the ratio of lower to higher aromatic in paraffin-aromatics mixtures, for example the hydrocarbon mixture obtained by reforming.

3,751,504

VAPOR-PHASE ALKYLATION IN PRESENCE OF CRYSTALLINE ALUMINOSILICATE CATALYST WITH SEPARATE TRANSALKYLATION

Philip E. Keown, Clyde C. Meyers, and Robert G. Wetherold, Beaumont, Tex., assignors to Mobil Oil Corporation

Filed May 12, 1972, Ser. No. 252,884
Int. Cl. C07c *3/62, 3/52*
U.S. Cl. 260—672 T 28 Claims



A process is provided for alkylation of aromatic hydrocarbons by contacting same with an alkylating agent in a reaction zone maintained under conditions such that said alkylation is accomplished in the vapor-phase and in the presence of a catalyst comprising a crystalline aluminosilicate zeolite characterized by a unique X-ray diffraction pattern, said catalyst under said conditions being capable of affording a high and selective yield of desired alkylaromatic product. Said alkylation process is accompanied by a system for transalkylation of the polyalkylaromatic portion of the effluent from said alkylation process. There is also provided, when said reaction zone is comprised of a series of reactor stages, a quench for effluent from said stages between said stages. Also, a catalyst steam regeneration method is provided.

3,751,505

HYDRODEALKYLATION PROCESS

Angelo Bergomi, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 28, 1972, Ser. No. 238,946
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 R 9 Claims

There is disclosed a method for the hydrodealkylation of hydrocarbons in which toluene, xylene, ethyl benzene and mono- and dimethylnaphthylenes are hydrodealkylated when passed with hydrogen over a catalyst comprising an alkali metal dispersed on an anhydrous support, said catalyst having a surface area of at least one square meter per gram at temperatures ranging from about 220° C. to about 550° C.

3,751,506

VAPOR-PHASE ALKYLATION IN PRESENCE OF CRYSTALLINE ALUMINOSILICATE CATALYST

George Thomas Burress, Beaumont, Tex., assignor to Mobil Oil Corporation

No Drawing. Filed May 12, 1972, Ser. No. 252,776
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 R 13 Claims

A process is provided for alkylation of aromatic hydrocarbons by contacting same with an alkylating agent in a reaction zone maintained under conditions such that said alkylation is accomplished in the vapor-phase and in the presence of a catalyst comprising a crystalline aluminosilicate zeolite characterized by a unique X-ray diffraction pattern, said catalyst under said conditions being capable of affording a high and selective yield of desired alkylaromatic product.

3,751,507

ADSORPTION PROCESS

Robert Winn Walker, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Original application Aug. 19, 1969, Ser. No. 851,456, now abandoned. Divided and this application July 12, 1971, Ser. No. 162,016
Int Cl. C07c *7/12*
U.S. Cl. 260—674 SA 8 Claims

A process for adsorbing or removing compounds, especially polar compounds from non-polar compounds is disclosed. An example is the adsorption of aliphatic alcohols or phenolic compounds from organic solvents. The adsorption process utilizes cross-linked adsorbent resins containing tertiary amine oxide functionality.

3,751,508

CATALYST FOR SELECTIVE HYDROGENATION OF ACETYLENIC HYDROCARBON IN THE CONCURRENT PRESENCE OF DIOLEFIN

Tokuo Fujiso, Yokosuka, and Tadashi Ohmori, Kawasaki, Japan, assignors to Nippon Oil Company, Ltd., Minato-ku, Tokyo, Japan

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,714
Claims priority, application Japan, Feb. 25, 1970, 45/15,526
Int. Cl. B01j *11/22;* C07c *11/22*
U.S. Cl. 260—677 H 6 Claims

Catalyst for selective hydrogenation of acetylenic hydrocarbons in the concurrent presence of diolefins, which is composed of the carrier containing at least 5% by weight of magnesium-aluminum spinel of the formula,

$$MgAl_2O_4$$

and, as the active metal component supported on the carrier, 1–50% by weight of copper component calculated as copper oxide, and 0.1–3% by weight of nickel component calculated as nickel oxide.

3,751,509

PROCESS FOR ISOLATING ISOBUTYLENE FROM BUTANE-BUTYLENE FRACTION

Alexandr Grigorievich Liakumovich, prospekt Lenina 23, kv. 4; Jury Ivanovich Michurov, prospekt Lenina 13, kv. 4; and Nonna Fedorovna Kian, ulitsa Voxalnaya 2v, kv. 55, all of Sterlitamak, U.S.S.R.; Valerian Mikhailovich Sobolev, Naberezhnaya imeni Gorkogo 46–50, kv. 185, Moscow, U.S.S.R.; and Vladimir Ivanovich Ponomarenko, ulitsa Yakutova 22, Sterlitamak, U.S.S.R.

No Drawing. Filed July 17, 1972, Ser. No. 272,663

Int. Cl. C07c *11/12*

U.S. Cl. 260—677 A **6 Claims**

A process for isolating isobutylene from butane-butylene fraction which comprises treating butane-butylene fraction with phenol or alkylphenol in the presence of a catalyst such as aluminium, alkylaluminium or aluminium phenoxide, in an amount of at least 0.5% by weight as calculated for the starting phenol or alkylphenol at a temperature within a range of from 100 to 160° C. and under a pressure of from 2 to 30 atm. The resulting product of interaction of phenol or alkylphenol and isobutylene is subjected to decomposition in the presence of the above-mentioned catalyst at a temperature of from 180 to 240° C. until isobutylene is formed, as well as the starting phenol or a mixture of the starting phenol with mono- or di-tert.butylphenols, or the starting alkylphenol of a mixture of the starting alkylphenol with its mono- and di-tert.butyl derivatives. Isobutylene is isolated, whereas the phenols resulting from the decomposition are recycled to the stage of treating butane-butylene fraction.

The process of the present invention enables the elimination of isobutylene losses due to its polymerization and copolymerization with butenes, as well as avoidance of equipment corrosion and catalyst losses.

3,751,510

DEHYDROGENATION OF OLEFINS

Roger W. Spoerke, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,643

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 R **6 Claims**

There is disclosed a process for the dehydrogenation of olefins to form diolefins by subjecting olefins to dehydrogenation conditions. Alkali metals and alkaline earth metals in an unoxidized state on suitable supports such as carbon, alumina, silica, etc. are used as catalysts.

3,751,511

ISOMERIZATION OF 2-BUTYNE TO 1,2-BUTADIENE

Edward L. Kay and Durward T. Roberts, Jr., Akron, Lawrence E. Calihan, Cuyahoga Falls, and Lynn B. Wakefield, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 12, 1972, Ser. No. 261,859

Int. Cl. C07c *5/24, 11/16*

U.S. Cl. 260—680 R **5 Claims**

2-butyne is isomerized to 1,2-butadiene using a catalyst which is a salt of a metal from Group I–A or II–A and an aliphatic alcohol having from one to six carbon atoms. The reaction takes place at a temperature of from 0° to 100° C., and the desired 1,2-butadiene is separated and recovered from the reaction products.

3,751,512

PROMOTED OXIDATIVE DEHYDROGENATION PROCESS

Marvin Z. Woskow, Houston, and Harold F. Christmann, Seabrook, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,904

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **10 Claims**

Improved oxidative dehydrogenation catalysts can be prepared by adding rhenium or a platinum group metal to a metal ferrite oxidative dehydrogenation catalyst, for example by adding 0.02% palladium to Mg ferrite treated with 2% phosphoric acid, the conversion, selectivity and yield were the same as an unpromoted Mg ferrite treated with 3% phosphoric acid but at substantially lower inlet and maximum temperatures. In other embodiments of the invention the yield can be substantially increased while reducing the temperatures, e.g., Mg ferrites+5% H_3PO_4+0.01% Pd gave 67 mole percent yield of butadiene at a maximum temperature 40° F. lower than the unpromoted catalyst which gave only 60 mole percent yield.

3,751,513

SKELETAL REARRANGEMENT OF OLEFINS

James J. Tazuma, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,176

Int. Cl. C07c *5/22*

U.S. Cl. 260—683.2 **6 Claims**

There is disclosed a method of skeletal rearrangement of olefins which comprises subjecting at least one olefin having at least four carbon atoms in its main chain to temperatures ranging from about 250° C. to about 650° C., while said olefin is in the presence of a catalyst from the group consisting of cupric fluoride, cupric chloride, cupric bromide and cuprous chloride, said catalyst being supported on alumina or silica alumina in an amount of about 5 to about 25 percent by weight of support.

3,751,514

PREPARATION OF ISOBUTYLENE AND PROPYLENE FROM ISOBUTANE

Frederic H. Hoppstock, Akron, and Jeffrey A. Goodwin and Kenneth J. Frech, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation of abandoned application Ser. No. 861,142, Sept. 25, 1969. This application June 21, 1971, Ser. No. 155,287

Int. Cl. C07c *3/28, 5/18*; C10g *11/06, 11/08*

U.S. Cl. 260—683.3 **6 Claims**

There is disclosed a process for the simultaneous preparation of isobutylene and propylene from isobutane in the presence of a homogeneous catalyst system. Hydrogen sulfide, methyl mercaptan, ammonium hydrosulfide, ammonium bromide and ammonium sulfide are disclosed as representative examples of the homogeneous catalyst system employed.

3,751,515

HYDROGENATION PROCESS

Mario D. Zadra, Barberton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 28, 1972, Ser. No. 238,960

Int. Cl. C07c *5/04, 5/06*

U.S. Cl. 260—683.9 **8 Claims**

There is disclosed a method for the hydrogenation of monoolefins, cycloolefins, diolefins, cyclodiolefins and acetylenes which are hydrogenated when passed with hydrogen over a catalyst comprising an alkali metal dispersed on an anhydrous support, said catalyst having a surface area of at least one square meter per gram at temperatures ranging from about 80° C. to about 500° C.

3,751,516

PREPARATION OF PROPYLENE FROM NORMAL BUTANE

Kenneth J. Frech, Tallmadge, Frederic H. Hoppstock, Akron, and Jeffrey A. Goodwin, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation of abandoned application Ser. No. 859,164, Sept. 18, 1969. This application June 21, 1971, Ser. No. 155,295

Int. Cl. C07c *3/28*; C10g *11/06*

U.S. Cl. 260—683 R **6 Claims**

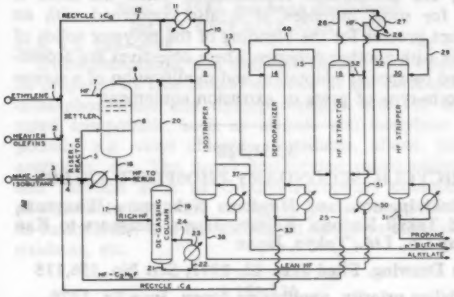
There is disclosed a method of preparing propylene by pyrolyzing n-butane in the presence of a homogeneous

catalyst system. Among the examples of the homogeneous catalyst disclosed is hydrogen sulfide, methyl mercaptan, ammonium hydrosulfide, ammonium bromide and ammonium sulfide.

3,751,517
RECOVERY OF ALKYL FLUORIDE IN ALKYLATION OF ISOPARAFFIN WITH ETHYLENE AND A HIGHER OLEFIN PROMOTER

Thomas Hutson, Jr., and Cecil O. Carter, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Mar. 3, 1971, Ser. No. 120,588
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.48 4 Claims

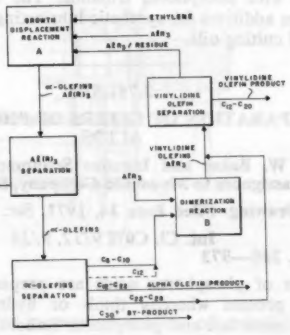


In the alkylation of an isoparaffin wih an olefin in the presence of hydrofluoric acid as catalyst wherein the total olefin feed and/or isoparaffin stream includes or is converted in part to propane and alkyl fluoride formed in the operation is found in a propane containing stream, said stream is contacted with liquid hydrogen fluoride to extract the alkyl fluoride from the propane and the thus enriched hydrogen fluoride is charged to the alkylation, the propane being recovered from the usual hydrogen fluoride stripper.

3,751,518
INTEGRATED CONTINUOUS PROCESS FOR OLEFIN PRODUCTION

John Joseph Hagan, Kenneth Patrick Keating, and Thomas Howard Austin, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Aug. 16, 1971, Ser. No. 172,159
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D 4 Claims



A novel combination of olefin polymerization reactions provides an integrated continuous process for efficiently producing high yields of certain olefins that are valuable for preparing olefin sulfonates.

3,751,519
COMPATIBLE POLYCARBONATE-SILOXANE COMPOSITION

Edgar E. Bostick, Scotia, N.Y., and Donald B. G. Jaquiss, New Harmony, Ind., assignors to General Electric Company

No Drawing. Filed July 29, 1971, Ser. No. 167,483
Int. Cl. C08g *47/10, 17/13*
U.S. Cl. 260—824 4 Claims

A composition consisting of in admixture, a polycarbonate and 0.01–2.0 weight percent of a particular solid monomeric crystallized cyclosiloxane compound. Particularly, the siloxane employed herein is octaphenylcyclotetrasiloxane.

3,751,520
POLYURETHANE COMPOSITIONS CONTAINING POLYVINYLIDENE FLUORIDE

Toshio Yasuda, Tokyo, Japan, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 84,144, Oct. 26, 1970. This application Feb. 7, 1972, Ser. No. 224,312
Claims priority, application Japan, Oct. 27, 1969, 44/85,914
Int. Cl. C08g *41/04*
U.S. Cl. 260—859 R 4 Claims

The coefficient of friction of a polyurethane elastomer is reduced by adding thereto from about 5 parts to about 20 parts by weight based on the total weight of the resulting composition of a homopolymeric vinylidene fluoride resin.

3,751,521
HIGH IMPACT POLYOLEFIN COMPOSITIONS COMPRISING E/P BLOCK COPOLYMER AND HIGH DENSITY POLYETHYLENE

Iamurri Roger, Le Meyran, Martigues, France

No Drawing. Continuation of abandoned application Ser. No. 811,595, Mar. 28, 1969. This application June 18, 1971, Ser. No. 154,675
Claims priority, application France, Apr. 17, 1968, 148,370
Int. Cl. C08f *37/18*
U.S. Cl. 260—876 B 10 Claims

High impact strength polyolefin compositions formulated of 50% to 98% by weight polyethylene having a specific gravity greater than 0.96 and 50% to 2% by weight of a sequenced copolymer formed of 5% to 50% by weight of a sequence obtained by statistic copolymerization of ethylene and propylene with the remainder formed of a previous or subsequent sequence of polymerized propylene.

3,751,522
GRAFT COPOLYMERS AND PROCESS FOR THEIR PREPARATION

Donald R. Lachowicz, Fishkill, and Charles B. Holder, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,144
Int. Cl. C08f *15/00*
U.S. Cl. 260—877 9 Claims

Graft copolymers are prepared in a two-stage process by first reacting, for example, 1,2-polybutadiene or an ethylene/propylene/alkylidene norbornene terpolymer, with a mixture of dinitrogen tetroxide and oxygen to form a nitrooxidized backbone polymer having incorporated therein nitro and peroxy nitrate functions which serve, in the second stage of the process, as sites for the subsequent graft polymerization of an acrylate monomer.

3,751,523

TWO-STAGE PROCESS FOR PREPARING GRAFT COPOLYMERS

Donald R. Lachowicz, Fishkill, and Charles B. Holder, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,133

Int. Cl. C08f *15/00*

U.S. Cl. 260—877 9 Claims

Graft copolymers are prepared in a two-stage process by first reacting, for example, 1,2-polybutadiene or an ethylene/propylene/alkylidene norbornene terpolymer with dinitrogen tetroxide to form a nitrated backbone polymer having incorporated therein nitro and nitrite functions which serve, in the second stage of the process, as sites for the subsequent graft copolymerization of an acrylate monomer.

3,751,524

MONOVINYLIDENE AROMATIC POLYMER COMPOSITIONS MODIFIED WITH OLEFIN POLYMERS

Daniel H. Haigh, Beaverton, Mich., and James B. Louch, Hampton, Va., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 2, 1971, Ser. No. 149,379

Int. Cl. C08f *19/00*

U.S. Cl. 260—878 R 7 Claims

Monovinylidene aromatic polymers having improved toughness and surface characteristics are prepared by polymerizing monomeric compositions of monovinylidene aromatic monomers, rubber, cross-linkable material and a modifying amount of high molecular weight olefin polymer.

3,751,525

GASKET-FORMING COMPOSITIONS

Mannie Brenner, 393 Broadway, Cambridge, Mass. 02145; Fred L. Chase, 30 Lake Shore Drive, Arlington, Mass. 02174; and Arthur J. Leydon, 587 Lexington St., Waltham, Mass. 02154

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,268

Int. Cl. C08f *19/06, 41/04*

U.S. Cl. 260—880 B 4 Claims

The oxidation resistance of gasket-forming compositions containing a thermoplastic styrene-butadiene-styrene type block copolymer is enhanced by incorporating into them, in addition to conventional quantities of N,N'-dinaphthyl-p-phenylenediamine, a small percentage of calcium, magnesium, zinc or aluminum oxide.

3,751,526

PROCESS FOR PRODUCING IMPACT RESISTANT THERMOPLASTIC RESINS

Hotuma Okasaka, Nagoya, Takehiko Okamoto, Chitagun, Toshimasa Hirai and Masakazu Inoue, Nagoya, and Akira Asama, Nishinomiya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed Sept. 30, 1970, Ser. No. 76,983

Int. Cl. C08f *19/08, 1/04*

U.S. Cl. 260—880 R 5 Claims

A latex, wherein a diene type rubber is dispersed, is added to an unsaturated monomer, at least 20% of which compries an aromatic unsaturated monomer. Separation of water from the mixture, in which the monomer acts as an extractant with respect to the diene rubber, and then bulk polymerizing the mixture results in the production of an impact resistant resin having many desirable properties.

3,751,527

PROCESS FOR DELIQUEFYING, PURIFYING AND BLENDING POLYMERS

Newman M. Bortnick, Oreland, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 18, 1971, Ser. No. 199,912

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 16 Claims

The present invention is concerned with separation of the liquid from the solids of an emulsion polymer latex in such a manner as to achieve removal as well of water-soluble components, such as emulsifiers, catalysts, and other materials which, though needed to produce the latex, are undesirable contaminants when the latex is used for some purposes. It is also concerned with an efficient process for the blending of the polymer solids of a latex with another polymer. These objectives are accomplished by special adaptation and modification of a screw- or worm-type of press or extrusion equipment.

3,751,528

TRICYCLIC SECONDARY PHOSPHITE ESTERS

Yoshiaki Inamoto and Hirokazu Nakayama, Wkayama, and Takeji Kadono, Kainan, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

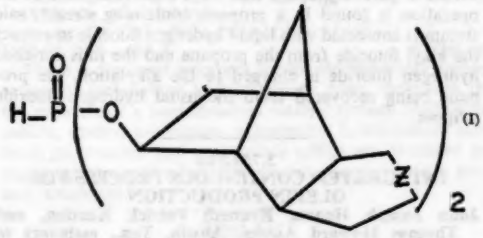
No Drawing. Filed June 23, 1971, Ser. No. 156,115

Claims priority, application Japan, June 24, 1970, 45/54,980

Int. Cl. C07f *9/08*

U.S. Cl. 260—956 1 Claim

A compound of the formula



(I)

wherein Z is a single or double bond, is prepared by reacting, in an inert solvent, a compound selected from the group consisting of 2 - exo-hydroxy-exo-trimethylenenorbornane and 2 - exo-hydroxy-2,3-dihydro-exo-dicyclopentadiene with phosphorus trihalide. The compounds are useful as additives for synthetic lubricating oils, hydraulic oils and cutting oils.

3,751,529

PREPARATION OF ESTERS OF PHOSPHORUS ACIDS

Joseph W. Baker and Ingatius Schumacher, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 24, 1971, Ser. No. 156,477

Int. Cl. C07f *9/12, 9/18*

U.S. Cl. 260—973 16 Claims

Esters of phosphorus acids are prepared by an improved process whereby thiol- or hydroxyl-containing organic materials and phosphorus halides are reacted at specified temperatures in the presence of carbamate catalysts thereby providing high yields of substantially pure esters and allowing preparation of selected mono-, di- and tri-esters of phosphorus acids having substantially

no side reactant contamination. By means of this improved process, mono-, di- and tri-esters of phosphorus acids may be selectively prepared. They are useful as plasticizers and processing aids and as intermediates in the preparation of plasticizers, oil additives and functional fluids.

3,751,530

FREE RADICAL ADDITION OF DITHIOPHOSPHONIC AND DITHIOPHOSPHINIC ACIDS TO ACETYLENES

Alexis A. Oswald, Mountainside, and George N. Schmit, Parlin, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 28, 1968, Ser. No. 732,553
The portion of the term of the patent subsequent to Sept. 5, 1984, has been disclaimed
Int. Cl. C07f *9/32, 9/36, 9/40*
U.S. Cl. 260—978 **4 Claims**

Dithiophosphonic and dithiophosphinic acid esters can be prepared by free radical addition of the corresponding dithiophosphonic and dithiophosphinic acids to unsaturated compounds, such as olefinic and acetylene compounds, e.g. vinyl chloride, butadiene, allene, methylacetylene, etc. The novel unsaturated mono-adducts of this reaction such as O-ethyl-S-propenyl ethanedithiophosphonate, e.g., are useful as pesticides, particularly as insecticides, and lubricating oil additives such as antioxidants, etc.

3,751,531

METHOD OF BIAXIALLY STRETCHING TUBES OF POLYVINYL FLUORIDE POLYMERS

George N. Foster, Somerville, and William Sacks, Gillette, N.J., assignors to Union Carbide Corporation

No Drawing. Original application Nov. 24, 1967, Ser. No. 685,336, now Patent No. 3,594,458. Divided and this application Mar. 16, 1971, Ser. No. 124,952
Int. Cl. B29d *7/24;* **B01j** *1/10*
U.S. Cl. 264—22 **5 Claims**

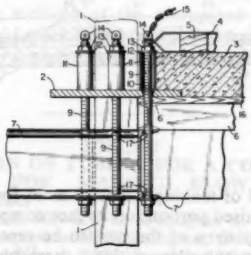
Vinyl fluoride polymer webs including film, in the absence of a solvent can upon irradiation and heating to orientation temperature, be readily biaxially oriented, in tubular or nontubular form, to a clear, durable web.

3,751,532

MECHANICAL METHOD OF FORMING CONCRETE VIA SUSPENSION

Paul R. Roth, 550 Ocean Drive, Key Biscayne, Fla. 33149

Filed Dec. 11, 1969, Ser. No. 884,236
Int. Cl. E04b *1/16, 1/35, 5/17*
U.S. Cl. 264—31 **1 Claim**



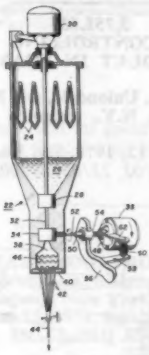
A method for suspension casting of a building slab involving, as a basic unit of a modular system, four vertical columns, beams horizontally extending therebetween and suspended therefrom at a preselected height, the beams and portions of the column suspension structure serving to sandwich and clamp the slab form so that after curing, the beams, form, and clamps can be dropped for use on the next higher floor.

3,751,533

METHOD AND APPARATUS FOR MONITORING MELT SPINNING

David Bowen, Jr., Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation of abandoned application Ser. No. 42,102, June 1, 1970. This application Sept. 15, 1971, Ser. No. 180,912
Int. Cl. D01d *5/12;* **G06g** *7/14*
U.S. Cl. 264—40 **6 Claims**



Meter and booster pump motors are resiliently mounted to deflect or pivot about their own axes in reaction to torque transmitted to their respective pumps. This deflection or pivotal motion is a measure of the pressures developed by the pumps, and permits early detection of excessive or insufficient pack pressure, inadequate melt supply, etc.

3,751,534

PROCESS FOR THE PRODUCTION OF LAMINAR CELLULAR ARTICLES

David Fairclough Oxley, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 723,248, Apr. 22, 1968. This application Apr. 8, 1971, Ser. No. 132,597
Claims priority, application Great Britain, May 3, 1967, 20,590/67, 20,591/67
Int. Cl. B29d *9/00, 27/00;* **B32b** *7/02*
U.S. Cl. 264—45 **15 Claims**

Producing a laminate having a cellular core and an unfoamed surface skin by injecting a non-foamable thermoplastic composition and then a foamable thermoplastic composition into a mould and retaining the materials within the mould and thereafter enlarging the mould and allowing the foamable composition to foam.

3,751,535

PREPARATION OF MOULDING COMPOSITIONS CONTAINING GLASS FIBERS

Vincenzo Ruoti and Felice Farioli, Milan, Italy, assignors to Snia Viscosa Società Nazionale Industria Applicazioni Viscosa, Milan, Italy

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,085
Claims priority, application Italy, Dec. 31, 1969, 26,552/69
Int. Cl. B01j *2/20*
U.S. Cl. 264—141 **3 Claims**

A method of forming a granulated compound having excellent physical properties and consisting of a mixture of a synthetic linear polyamide, a synthetic linear polyester and glass fibers by feeding suitable amounts of said

polyamide, polyester and glass fibers to an extruder and then granulating the resulting extruded mixture.

3,751,536

MICROPOROUS MEMBRANES

Guy Bourat, Bourg-la-Reine, and Albert Fabre, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,115
Claims priority, application France, Aug. 7, 1970, 29,297
Int. Cl. B29d *27/04*
U.S. Cl. 264—47 **8 Claims**

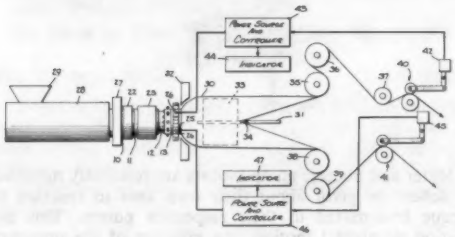
The invention provides a microporous opaque polyvinyl chloride membrane having a porosity between 40 and 85%, the pores having a diameter of less than 1μ.

3,751,537

PROCESS FOR CONTROLLING DIMENSIONS OF THE PRODUCT IN FOAMED PLASTIC EXTRUSION

Victor Edward Scotto, Uniondale, and Maurice W. Blackwelder, Deer Park, N.Y., assignors to Owens-Illinois, Inc.

Filed Jan. 12, 1970, Ser. No. 2,005
Int. Cl. B29d *7/02, 23/00, 27/00*; B29f *3/08*
U.S. Cl. 264—40 **3 Claims**



Caliper in the cross direction in webs of extruded foamed plastic produced by longitudinal slitting of a tubular extrusion is controlled by differentially heating the extrusion die circumferentially about its axis. This can be accomplished by locating a plurality of independently controllable heaters around the die.

3,751,538

FABRICATION OF NUCLEAR FUEL PELLETS

Alfred Jean Flipot, Geel, and Robert E. M. Gilissen, Mol, Belgium, assignors to Belgonucleaire, S.A., and Centre d'Etude l'Energie Nucleaire, both of Brussels, Belgium

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,226
Int. Cl. G21c *21/00*
U.S. Cl. 264—.5 **4 Claims**

The specification discloses nuclear fuel pellets containing small amounts of barium in an amount sufficient to lower the bulk density of the pellets, and a process of controlling the bulk density of such pellets based on the addition of barium.

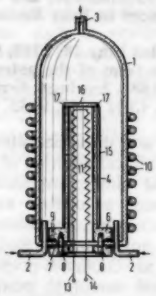
3,751,539

USE OF VAPOR DEPOSITION TO FORM A HOLLOW TUBULAR BODY CLOSED ON ONE END

Konrad Reuschel, Vaterstetten, Arno Kersting, Erlangen, and Wolfgang Keller, Pretzfeld, Germany, assignors to Siemens Aktiengesellschaft, Munich, Erlangen and Berlin, Germany

Continuation-in-part of application Ser. No. 826,249, May 20, 1969. This application Oct. 26, 1971, Ser. No. 192,672
Claims priority, application Germany, Apr. 2, 1969, P 19 17 016.2
Int. Cl. B01j *17/30, 17/32*
U.S. Cl. 264—81 **3 Claims**

Described are two methods of producing a hollow body, comprised of semiconductor material, especially silicon, by precipitation from a gaseous compound of said semiconductor material upon the surface of a heated carrier body, which after a sufficiently thick layer of semiconductor material has been precipitated, is removed again without damaging said layer. One method is characterized by using a hollow carrier body, open at least at two opposite sides. Prior to the precipitation of the semiconductor material, one of the open sides of the carrier



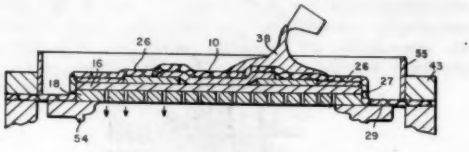
body is covered by a wafer from the same semiconductor material whose shape corresponds to the open side. Thereafter, the semiconductor material is precipitated from the gaseous compound until the desired layer thickness and a gas-tight connection is obtained between the layer and the covering semiconductor material. The second method precipitates a semiconductor layer and thereafter welds a cover on the tube.

3,751,540

METHOD OF MAKING A MOLD FOR REPRODUCING PARTS OF SHOES AND THE LIKE

Frederick A. Prahl, Jr., Carlisle, and Robert B. Dunlap, Medway, Mass., assignors to Compo Industries, Inc., Waltham, Mass.

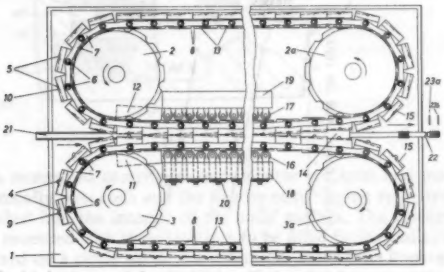
Filed Aug. 19, 1971, Ser. No. 173,072
Int. Cl. B29c *1/02*
U.S. Cl. 264—90 **12 Claims**



The method of making a master mold for reproducing parts having raised portions on its face comprising providing a master pattern of the part to be reproduced, positioning the master pattern within a mask on a supporting surface, displacing the elevated portions at the face of the master pattern into a substantially common plane, forming a rigid structure across the back of the master pattern and mask, about the peripheral edge of the mask and forwardly of the plane of the master pattern to provide a cavity at the forward side of the master pattern, removing the mask from the rigid structure, flooding the cavity with a curable liquid material having a lower di-

electric constant than the thermoplastic of which the part is to be reproduced to a predetermined depth which is greater than the thickness of the projecting portion, causing the liquid material to cure and then stripping the cured material representing the mold from the rigid structure.

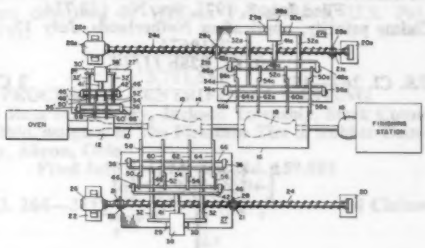
3,751,541
PROCESS OF FORMING PLASTIC TUBING WHICH IS PARTIALLY CORRUGATED
Wilhelm Hegler, 8731 Oerlenbach, Germany
Continuation-in-part of abandoned application Ser. No. 779,117, Nov. 26, 1968. This application Mar. 24, 1971, Ser. No. 127,757
Claims priority, application Germany, Nov. 29, 1967, P 17 04 715.3
Int. Cl. B29c *17/07, 17/14*
U.S. Cl. 264—90 **10 Claims**



Continuous formation of partially transversely corrugated plastic tubing by extruding a tube of thermoplastic material; passing the tubing, while still in thermoplastic forming condition, through a mating mold half assembly in which each set of mold halves are connected together in an endless fashion and wherein some of the mating mold halves have transverse corrugation molding means therein and some of the mating mold halves are smooth insofar as their molding surfaces are concerned; closing the mold halves about said tubing; simultaneously conveying the endless mold half assemblies and the endless thermoplastic tubing in molding relation to each other at the same rate along a mold path; applying a vacuum to the outside of said thermoplastic tubing along said mold path through said mold halves thereby drawing said thermoplastic tubing against the smooth molding surfaces of the smooth mold halves and into the transverse corrugated molding surfaces of the corrugated mold halves; and opening said mold halves from about said tubing after said tubing has cooled to below its thermoplastic forming temperature.

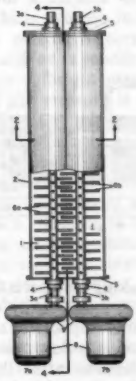
3,751,542
ORIENTATION OF TUBING FOR A CONTINUOUS PROCESS FOR MAKING BLOW MOLDED CONTAINERS
John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Nov. 9, 1971, Ser. No. 197,060
Int. Cl. B29c *17/07*
U.S. Cl. 264—99 **1 Claim**

The time lapse between initiation of orientation of a continuous plastic tubing and blowing a container therefrom in a continuous process for making blow molded containers is reduced by having one mold moving away from an oven to draw a given length of tubing from the oven and then clamping the tubing at a location adjacent the oven and letting continued movement of the mold



away from the oven orient the given length of tubing. Another mold closes on the oriented length of tubing and a container is formed therein.

3,751,543
PELLETIZING PROCESS
Paul N. Hare, Swartz, La., assignor to Cities Service Company, New York, N.Y.
Filed June 25, 1971, Ser. No. 156,629
Int. Cl. B01j *2/10*
U.S. Cl. 264—117 **6 Claims**



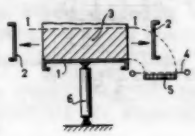
Wetted powders are pelletized in an elongated pelletizing zone by means of interdigitable agitating members which project radially outwards from two rotatable shafts which extend axially through the zone. A curved, longitudinally extending wall of a conduit which bounds the pelletizing zone is proximal to the tip-ends of the agitating members which are not interdigitating during rotation of the shafts. During pelletization the wetted powder advances axially through the conduit, first being swirled against the curved conduit wall, and then toward the center line of the conduit where it is transected by interdigitating members. The members which are not interdigitating move through the wetted powder against the wall. There is recirculation of wetted powder from the wall, through the interdigitating members, and back to the wall as the powder advances axially through the pelletizing zone.

3,751,544

METHOD FOR CUTTING THROUGH A BLOCK OF PLASTIC MATERIAL

Johannes Jacobus Smorenburg, Abcoude, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed July 8, 1971, Ser. No. 160,724
Claims priority, application Netherlands, July 17, 1970, 7010674
Int. Cl. B28b *11/14*
U.S. Cl. 264—157 **2 Claims**



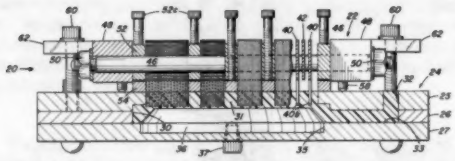
planes parallel to the upstanding sides of the block, is performed subsequent to a tilting movement around a line parallel to an edge of the bottom of the block by means of an auxiliary supporting surface with at least one cutting wire lying upon said surface.

3,751,545

FABRICATION OF PLASTIC SPINNERETTES BY MEANS OF STACKED MANDRELS

James Bruce Peeso, Jr., and Donald Murfitt, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 723,696, Apr. 24, 1968. This application Sept. 3, 1970, Ser. No. 69,250
Int. Cl. B29c *1/14*
U.S. Cl. 264—162 **7 Claims**



A method of making spinnerettes comprising casting a plastic resin into a mold cavity defined by a plurality of comb-like elements supported above the cavity, said elements inserted vertically downward into said cavity, and withdrawing said elements after the resin has hardened thereby leaving a plurality of holes in the casting which are the orifices of the finished spinnerette. This method enables the manufacture of spinnerettes having a large number of orifices of any desired shape.

3,751,546

PROCESS FOR THE MANUFACTURE OF FILAMENTS ON THE BASIS OF HIGH-MELTING POLYAMIDES

Ernst Horoldt, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 26, 1971, Ser. No. 164,857
Claims priority, application Germany, July 28, 1970, P 20 37 254.7
Int. Cl. D01f *7/00*
U.S. Cl. 264—184 **5 Claims**

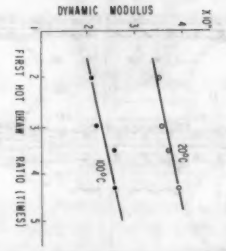
The application relates to a process for the wet spinning of preponderantly aromatic polyamides by spinning a spinning solution containing besides an aprotic solvent a dissolved metal halide into an aqueous salt-containing coagulation bath; the coagulation bath containing as salt the same metal halide as does the spinning solution. The process simplifies the manufacture of filaments made from high-melting polyamides having a high dynamic efficiency and partially a poor flammability, and it ensures an easy regeneration of the coagulation baths.

3,751,547

PROCESS FOR PRODUCING HIGH MODULUS POLYVINYL ALCOHOL SYNTHETIC FIBERS

Hiroshi Kawakami, Hideshi Satoh, Akira Miyoshi, Kazuharu Kawabata, and Kohkichi Kimura, Akoh, Japan, assignors to Unitika Limited, Amagasaki-shi, Hyogoken, Japan

Filed June 28, 1971, Ser. No. 157,246
Claims priority, application Japan, June 27, 1970, 45/56,238, 45/56,239
Int. Cl. D01f *7/00*
U.S. Cl. 264—210 F **15 Claims**



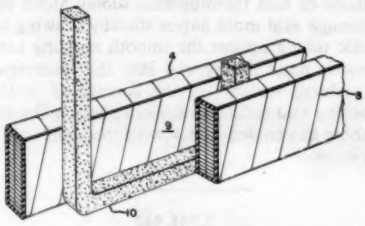
A process for producing high modulus polyvinyl alcohol synthetic fibers which comprises spin-drawing polyvinyl alcohol synthetic fibers having a homogeneous section and then carrying out a multistage hot drawing. Polyvinyl alcohol synthetic fibers are produced by such a process.

3,751,548

FORMED-IN-PLACE STATOR END WINDING BLOCKS FOR A DYNAMOELECTRIC MACHINE

Frank J. Lasak, Schenectady, N.Y., assignor to General Electric Company

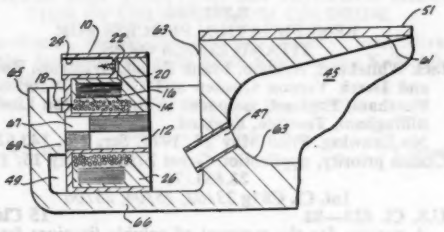
Filed Oct. 8, 1970, Ser. No. 79,094
Int. Cl. H02k *3/46*
U.S. Cl. 264—261 **6 Claims**



A method of forming the stator end windnig blocks of a large dynamoelectric machine is described whereby the end winding blocks are cast in place. The method is practiced by forming a mold cavity of a resilient sponge rubber material, between bar members, filling the cavity with a curable liquid plastic material, preferably a urethane rubber, and then curing the liquid material such that it is converted to a solid elastomer. When forming the spacer blocks of a large generator, a number of such mold cavities can be formed and then the cavities may be filled while the generator is periodically

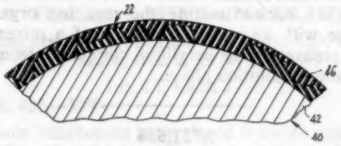
rotated, allowing each end winding block to partially cure before rotation to the next position, thereby preventing spillage.

3,751,549
PROCESS FOR IMPREGNATING ELECTRICAL COMPONENTS
Harry I. Hazzard, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Original application Mar. 12, 1969, Ser. No. 806,520, now Patent No. 3,619,865. Divided and this application Sept. 7, 1971, Ser. No. 178,390
Int. Cl. B29c *5/04*
U.S. Cl. 264—272 **7 Claims**



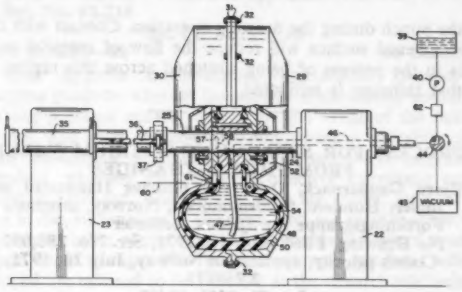
A motorized centrifugal impregnator insulates and mechanically pots coils and the like by centrifuging resin and catalyst into the interior of the coils' casings. The casings are mounted with their interiors to be filled facing radially inward on a circle about the rotational axis of the impregnator. An inner, generally flat surface of the impregnator is surrounded by equally spaced dividers which define distribution passages or channels leading to each coil casing. The passages are configured to produce radial resin and catalyst flow without resin pocketing. A lip or tube at the outer radial limits of each channel direct the resin into the coil casing. Resin and catalyst poured onto the inner surface are thoroughly mixed and distributed to the coils with the resin compound being equally divided by the equally spaced divider walls.

3,751,550
METHOD FOR MAKING DIFFERENTIAL DUROMETER FACED ROLLS
Jan P. Nauta, West Hartford, Conn., assignor to Rowland Development Corporation, Kensington, Conn.
Filed Aug. 20, 1970, Ser. No. 65,433
Int. Cl. B29c *3/00;* B29b *1/00*
U.S. Cl. 264—275 **11 Claims**



An embossing roll for producing visual pattern effects is formed with a composite coating of synthetic plastic in which the surface layer is of greater resilience than the inner layer and has a multiplicity of closely spaced embossing formations therein. The inner layer is of non-uniform depth to produce variations in depth of the more resilient outer layer and thereby variations in rigidity about the surface of the embossing roll. As a result, distortion in the spacing between embossing formations occurs when sufficient pressure is placed upon the roll at the nip during the embossing operation. The variations in thickness of the inner layer are conveniently accomplished by carving a substantially uniform deposit of the resin of the inner layer into the desired pattern and then depositing the outer layer thereon. The procedure is most desirably employed in the manufacture of optical sheet materials of the type described in William P. Rowland, U.S. Pat. 3,357,773.

3,751,551
PROCESS OF CENTRIFUGAL CASTING
Daniel Ross McGillvary, Jackson Township, Stark County, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed July 6, 1971, Ser. No. 159,893
Int. Cl. B29c *5/04*
U.S. Cl. 264—311 **14 Claims**

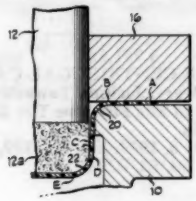


The process of centrifugally casting an article such as a tire or the like from a curable or hardenable liquid polymeric material, which process includes the steps of selecting a mold and placing a core within the mold which core is hollow and/or is readily deformable under pressure but which has sufficient memory to resume its original position when the pressure is removed. The article being formed is formed between the core and the mold. The space between the core and the mold is filled with the curable liquid material of which the article is to be formed and the hollow core is also filled with a liquid material. The liquid material in the hollow core, the material from which the core is constructed and the curable liquid material all have about the same specific gravity. The mold and core are rotated to centrifugally cast the article which is formed of the curable liquid material. The deformable core permits easy removal from the completed article and the matching of the specific gravities as aforementioned keeps the deformable core from distorting during the centrifugal casting operation. The order of introducing the liquid material into the core, introducing the curable liquid into the space between the mold and core and rotation of the mold and core can be varied within the limits as set forth in the following description. Variations in the structure for accomplishing the principle of matching specific gravities are illustrated and described.

3,751,552
METHOD FOR DRAWING THERMOPLASTIC MATERIALS
William R. Meadors, Washington, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.
Continuation of application Ser. No. 835,826, Jan. 31, 1969, which is a division of application Ser. No. 598,500, Dec. 1, 1966, both now abandoned. This application Jan. 12, 1972, Ser. No. 217,403
Int. Cl. B29c *17/03*
U.S. Cl. 264—320 **2 Claims**

In the deep drawing of synthetic thermoplastic sheet material, the present invention uses a roughened surface

on the terminal portion or nose of the punch. The function of this roughened punch surface is to firmly engage and grip the material as it is wrapped over the end of



the punch during the drawing operation. Contact with the roughened surface will reduce the flow of material as it is in the process of being stretched across this region so that thinning is mitigated.

3,751,553

PROCESS FOR SEPARATING YTTRIUM VALUES FROM THE LANTHANIDES

Bjorn Gaudernack, Oslo, and Gunnar Hannestad and Ingleiv Hundere, Skedsmokorset, Norway, assignors to Forskningsgruppe for Sjeldna Jordarter

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,097
Claims priority, application Norway, July 20, 1971, 2,750/71
Int. Cl. C22b *59/00*
U.S. Cl. 423—21 8 Claims

An improved liquid-liquid extraction process for the separation of yttrium values from the elements of the lanthanide series and other impurities is disclosed. The light lanthanide elements are separated by extraction from an aqueous nitrate solution with an organic solution of a quaternary ammonium nitrate, and the heavy lanthanides are subsequently removed from the aqueous solution by extraction with an organic solution of a quaternary ammonium thiocyanate.

3,751,554

PROCESS FOR THE EXTRACTION OF NICKEL, COPPER AND COBALT FROM MANGANIFEROUS ORES

Conrad B. Bare, Coopersburg, and Joseph W. Pasquali, Bethlehem, Pa., assignors to Bethlehem Steel Corporation

Filed Aug. 19, 1971, Ser. No. 173,210
Int. Cl. C22b *3/00*
U.S. Cl. 423—32 8 Claims

A process for the extraction of nickel, copper and cobalt from manganiferous ores, such as deep sea nodules, in which the ore is roasted from about 700° F. to about 1400° F. in a reducing atmosphere. The ore is cooled under non-oxidizing conditions, and leached under oxidizing conditions with an ammoniacal-ammonium carbonate solution comprising about 55 to 160 grams per liter of ammonia and about 30 to 120 grams per liter of carbon dioxide.

3,751,555

SOLVENT EXTRACTION PROCESS FOR THE RECOVERY OF MOLYBDENUM AND RHENIUM FROM MOLYBDENITE

Hal D. Peterson, Boulder, Colo., assignor to Molybdenum Corporation of America, Louviers, Colo.

Filed Mar. 22, 1972, Ser. No. 236,838
Int. Cl. C01g *39/00, 47/00*
U.S. Cl. 423—49 10 Claims

Process for the recovery of molybdenum and rhenium values from highly acid solutions which comprises contacting the solution with a water-immiscible organic phase including a mixed extractant comprising an alkyl phosphonate and an organophosphoric acid with or without the addition of an amine extractant, or first contacting the solution with the phosphonate to selectively remove rhenium, organic acids and other impurities, followed by contacting the resulting solution with the organophosphoric acid with or without the addition of an amine extractant and an organic phosphate, and recovering the molybdenum and rhenium values from the extractant by conventional means. Process is applicable to recovery of the metal values from leach solutions having a sulfuric acid content up to 600 grams per liter resulting from nitric acid-oxidation leach of molybdenite.

3,751,556

BENEFICIATION PROCESS FOR TITANIFEROUS ORES

Jack Whitehead, Acklam, Frank Ronald Williams, Rudby, and Derek Vernon Gosden and Graham Woodhouse, Horsham, England, assignors to British Titan Limited, Billingham, Teesside, England

No Drawing. Filed May 14, 1971, Ser. No. 143,629
Claims priority, application Great Britain, May 16, 1970, 23,851/70
Int. Cl. C01g *23/02, 25/04, 25/06*
U.S. Cl. 423—82 15 Claims

A process for the removal of soluble titanium from a solution obtained by leaching an iron-containing titaniferous material with aqueous hydrochloric acid by the addition of phosphoric acid or a phosphate, preferably in the presence of an oxidising agent, whereby the soluble titanium is precipitated in an insoluble form.

3,751,557

SOLVENT EXTRACTION PROCESS FOR PURIFICATION OF BERYLLIUM

Hiroshige Suzuki, Tokyo, Hisahiko Einaga, Ohmiya, and Yasumichi Mori, Koshigaya, Japan, assignors to National Institute for Researches in Inorganic Materials, Tokyo, Japan

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,042
Claims priority, application Japan, July 10, 1970, 45/59,901
Int. Cl. C22b *59/00*
U.S. Cl. 423—112 15 Claims

A solvent extraction process for the purification of beryllium using an aminopolycarboxylic acid as a masking or sequestering agent, which comprises (i) preparing an aqueous solution system containing the beryllium compound to be purified, an aminopolycarboxylic acid, water, and a compound selected from the group consisting of β-ketocarboxylic esters and malonic diesters, with the pH of the solution adjusted to 4.5–9, (ii) extracting the aqueous solution system with a water-immiscible, organic solvent, (iii) back-extracting the resulting organic solvent phase with an aqueous solution of a mineral acid, and (iv) recovering the beryllium compound from the resulting aqueous solution phase.

3,751,558

PROCESS OF SEPARATING COBALT FROM NICKEL BY MEANS OF AMMONIA

Ranko P. Crnojevich, Arvada, and Donald F. Lowe, Lakewood, Colo., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,761
Int. Cl. C01g *51/00, 53/00*
U.S. Cl. 423—144 15 Claims

A method is provided for separating nickel from cobalt contained in nickel-cobalt acid solutions whereby to produce a highly enriched nickel product low in cobalt wherein the nickel-cobalt acid solution is treated at ambient temperature with a predetermined amount of ammonia to produce a nickel-ammonia complex, an ammonium acid-salt and a cobalt-containing precipitate or concen-

trate which is separated from the solution, the ammonium ion concentration of the acid-salt being maintained below 0.3 mole per liter. The nickel is thereafter recovered from the solution. In its preferred aspects, the solution, after removal of the cobalt-containing precipitate, is heated to an elevated temperature of at least about 50° C. to form a second cobalt-containing precipitate which is separated from the solution, a highly enriched nickel product being thereafter recovered from the solution by known means, such as in the form of nickel hydroxide, nickel oxide, metallic nickel powder, or other form.

3,751,559

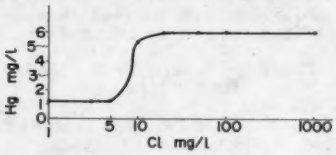
PROCESS FOR TREATING AN AQUEOUS SOLUTION OF CRUDE SODIUM CHLORIDE

Iwao Kanno, Junichi Yoshioka, and Sumito Fuzio, Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 16, 1971, Ser. No. 153,776

Int. Cl. C01d 3/16

U.S. Cl. 423—158 7 Claims



A process for treating an aqueous solution of crude sodium chloride containing mercury wherein, before removing magnesium and calcium which contaminate the crude sodium chloride, chlorine or sodium hypochlorite is added to said solution to control concentration of free chlorine therein to at least 10 mg./l., thereby to prevent mercury from precipitating with magnesium and calcium. It is preferable to recycle a slurry containing precipitates of calcium and magnesium.

3,751,560

MULTI-STAGE PROCESS FOR THE PREPARATION OF SODIUM BICARBONATE

Ulrich Neumann, Rodenkirchen, Germany, assignor to Chemiebau, Dr. A. Zieren GmbH. & Co. KG, Cologne-Mungersdorf, Germany

Filed Apr. 7, 1971, Ser. No. 131,987

Claims priority, application Germany, Apr. 8, 1970, P 20 16 633.0; Oct. 2, 1970, P 20 48 486.0

Int. Cl. C01d 7/10

U.S. Cl. 423—189 13 Claims

Sodium bicarbonate is produced from an aqueous solution of sodium hydroxide obtained from the sodium amalgam electrolytic process by:

(a) Reacting the sodium hydroxide solution with carbon dioxide at about 70–110° C., preferably 95–105° C., in a first stage to form a crystalline precipitate containing sodium carbonate monohydrate while simultaneously evaporating water from the reaction mixture;

(b) Separating the crystalline precipitate from mother liquor thereof and recycling the latter to the first stage;

(c) In a second stage, dissolving the separated crystalline precipitate containing sodium carbonate monohydrate, and reacting the resultant solution with carbon dioxide at 20–70° C., preferably 30–40° C., to precipitate sodium bicarbonate;

(d) Separating the resultant solid sodium bicarbonate from mother liquor, and recycling the latter into the second stage to dissolve said crystalline precipitate.

ERRATUM

For Class 423—645 see:
Patent No. 3,751,566

3,751,561

STABLE POLYMER-ENZYME ORAL HYGIENE COMPOSITIONS

Bernard S. Wildi, Kirkwood, Thomas L. Westman, St. Louis, and Leonard Keay, Florissant, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 763,341, Sept. 27, 1968. This application Nov. 23, 1970, Ser. No. 92,218

Int. Cl. A61k 7/16

U.S. Cl. 424—48 20 Claims

Oral hygiene compositions, comprising polymer-enzyme products wherein the enzyme is covalently bound, having protease activity within the pH range of the oral cavity, and such compositions comprising a plurality of polymer-enzyme products or a polymer-plural enzyme product, whereby the range of effective enzymatic activity is extended. The compositions are stable, long-acting in use, substantive to the teeth, and not readily subject to denaturation of the enzymatic component thereof even upon long storage. The polymer-enzyme products employed are tailored to be effective at the normal relatively neutral pH range of the oral cavity. One especially preferred composition for dental use comprises a polymer-enzyme product wherein both neutral protease and dextranase are covalently bound. Method of using such polymer-enzyme products in oral hygiene.

3,751,562

MEDICATED GELLED OILS

Joseph Nichols, Princeton, N.J., assignor to Princeton Biomedix Incorporated, Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 28,124, Apr. 13, 1970. This application Sept. 22, 1972, Ser. No. 291,239

Int. Cl. A61k 9/06, 27/00

U.S. Cl. 424—45 11 Claims

Medicated gelled oils suitable for topical application are disclosed. The gelled oils which form an ointment base are mineral oils gelled with at least one polyoxyethylated fatty acid alcohol ether. The base can be compounded with any conventional topical medicament for use as a germicide, fungicide, or anesthetic.

3,751,563

SUNSCREENS PREPARATIONS

Earl L. Richardson, Congers, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 11, 1969, Ser. No. 832,480

Int. Cl. A61l 23/00

U.S. Cl. 424—60 5 Claims

A solution adapted for use as a cosmetic sun-screen preparation comprising a polypropylene glycol monoalkylether fluid having an average molecular weight of about 400 to about 3000 and a viscosity of about 120 to about 3000 as measured in Saybolt Universal Seconds at 100° F. and wherein the alkyl group has from 1 to 10 carbon atoms as solvent and a chemical sunscreen agent as solute in at least a sufficient amount to screen the sun from human skin and up to about nine percent by weight of the solvent, said chemical sunscreen agent being selected from the group consisting of 2-ethoxyethyl p-methoxycinnam-

ate, amyl p-dimethylaminobenzoate, homomenthyl salicylate, 2-hydroxy - 4 - methoxy-benzophenone, 2,4-dihydroxy-benzophenone, 1 - monoglyceryl p-aminobenzoate, 2-ethylhexyl salicylate, and phenyl salicylate.

3,751,564

PROCESS FOR PREPARING SCLEROPROTEIN-ALKYL THIOSULFATE AGENTS FOR THE CARE OF THE HAIR

Wolfgang Eckardt, Bad Segeberg, Rudolf Tietjf, Hamburg, and Victor Wolf, Hamburg-Blankenese, Germany, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 781,237, Dec. 4, 1968. This application Mar. 5, 1971, Ser. No. 121,571

Claims priority, application Germany, Dec. 8, 1967, P 16 95 969.6

Int. Cl. A61k *7/06, 7/08*

U.S. Cl. 424—70 **7 Claims**

Process for the preparation of an anti-dandruff agent in which a partially degraded scleroprotein or fibrous protein is reacted with an alkyl or alkenyl thiosulphate in an aqueous alkaline medium.

3,751,565

THERAPEUTIC COMPOSITIONS

Salvatore L. Santorelli, 160—54 10th Ave., Whitestone, N.Y. 11357

No Drawing. Continuation-in-part of application Ser. No. 754,098, Aug. 12, 1968, which is a continuation of application Ser. No. 507,515, Nov. 12, 1965, which is a continuation-in-part of application Ser. No. 431,714, Feb. 10, 1965, which is a continuation-in-part of application Ser. No. 220,907, Aug. 31, 1962, which is a continuation-in-part of application Ser. No. 852,174, Nov. 12, 1959, which in turn is a continuation-in-part of application Ser. No. 773,809, Nov. 14, 1958, all now abandoned. This application Mar. 11, 1970, Ser. No. 18,717

Int. Cl. A61k *27/00*

U.S. Cl. 424—80 **4 Claims**

The present invention is directed to a composition having a complex compound therein, the composition being useful as a bactericidal and fungicidal agent or in the treatment of burns. The composition comprises 100 cc. of 60–70% alcohol or propylene glycol, about 18 to 22 grams of salicylic acid, about 0.1 to 2 grams of an iodine antiseptic such as polyvinylpyrrolidone-iodine or iodine/sodium iodide and 0.1 to 2 grams of a mercurial antiseptic such as 0.1 to 2 grams of sodium ethylmercurithiosalicylate or sodium dibromoxymercurifluorescein which form a complex compound, with salicylic acid being present in excess of 10 grams in the composition. The present invention also includes the complex compound of salicylic acid, an iodine antiseptic such as polyvinylpyrrolidone-iodine or iodine/sodium iodide and a mercurial antiseptic such as sodium ethylmercurithiosalicylate or sodium dibromoxymercurifluorescein, which can be used in solutions, ointments or sprays.

3,751,566

PREPARATION OF ALUMINUM HYDRIDE BY REACTION OF AN ALKALI METAL HYDRIDE WITH BORON TRICHLORIDE

John W. Churchill, Mount Carmel, Conn., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Jan. 15, 1969, Ser. No. 791,527

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 **10 Claims**

A novel process for the preparation of aluminum hydride. The process utilizes the reaction of an alkali metal aluminum hydride with a boron trihalide. Typically, the alkali metal is sodium or lithium and the halogen is chlorine. The process is conducted in the presence of an ether such as diethyl ether, followed by removal of the precipitate of the alkali metal halide, dilution of the solution with an aromatic solvent, and heating to remove ether, effect crystallization and convert to the stable form of aluminum hydride. The product is useful as a solid propellant ingredient.

3,751,567

SYNERGISTIC ANTIBIOTICS

Edward Alexander Konopka, Murray Hill, N.J., and Justus Melchior Gelzer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 81,112, Oct. 15, 1970, which is a continuation-in-part of abandoned application Ser. No. 13,788, Feb. 24, 1970, which in turn is a continuation-in-part of application Ser. No. 809,967, Mar. 24, 1969, now Patent No. 3,644,616, dated Feb. 22, 1972. This application Jan. 17, 1972, Ser. No. 218,537

Int. Cl. A61k *21/00*

U.S. Cl. 424—114 **4 Claims**

Rifamycines or their semisynthetic derivatives, in combination with penicillines or cephalosporines, exhibit synergistic effects against pathogens.

3,751,568

METHOD OF COATING TEETH WITH A DURABLE GLAZE

Sheila Ann Mundorff and Basil Glover Biddy, Rochester, N.Y., and Buddhi Man Shrestha, Biratnagar, Nepal, India, assignors to Eastman Dental Center, Rochester, N.Y.

Filed June 18, 1971, Ser. No. 154,360

Int. Cl. A61k *7/16*

U.S. Cl. 424—131 **14 Claims**

Ytterbium chloride and acidified solutions thereof are applied topically to teeth either preceding or following the topical application of titanium tetrafluoride to increase the resistance thereof to dental caries. The acidified solution of ytterbium chloride, certain organic acids, such as formic acid, acetic acid and the like and their salts, and certain inorganic acids, such as, hydrochloric acid, form an aesthetically pleasing, durable fluoride glaze on the tooth surface when applied topically either following or preceding the topical application of titanium tetrafluoride.

3,751,569

CLEAR COOKING AND SALAD OILS HAVING HYPOCHOLESTEROLEMIC PROPERTIES

Billy Arthur Erickson, Springfield, Mo., assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 842,698, July 17, 1969. This application Jan. 12, 1972, Ser. No. 217,708

Int. Cl. A61k *15/02*

U.S. Cl. 424—173 **8 Claims**

A cooking and salid oil composition having enhanced hypocholesterolemic properties is prepared by adding 0.5% to 10% (free sterol equivalent) by weight of the composition of plant sterol monocarboxylic acid ester to clear, liquid glyceride base oil.

3,751,570

POLYNICOTINIC ESTERS OF HESPERIDIN

Eugene L. Leroi, Bievres, France, assignor to Societe d'Etudes de Produits Chimiques, Issy-les-Moulineaux, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 726,232, May 2, 1968. This application July 16, 1970, Ser. No. 55,620

Claims priority, application Great Britain, May 5, 1967, 21,078/67

Int. Cl. C07c *47/18;* **A61k** *27/00*

U.S. Cl. 424—180 **2 Claims**

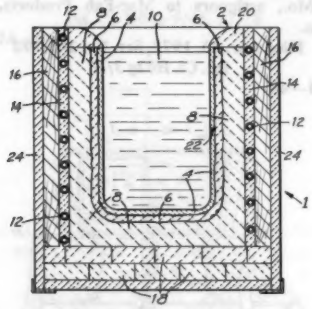
The present invention relates to the octonicotinic ester of hesperidin, to compositions containing it and to its preparation by reacting hesperidin with a nicotinoyl halide. The compound reduces the cholesterol count in the blood.

ELECTRICAL

3,751,571
REFRACTORY CEMENT LINING FOR CORELESS INDUCTION FURNACES

Owen M. Burrows, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 29, 1972, Ser. No. 239,201
Int. Cl. F27d *1/10*
U.S. Cl. 13—35 **3 Claims**



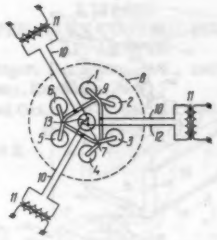
A multi strata refractory lining for coreless induction furnaces, formed from a castable refractory cement. The composition of the cement is preferably a mixture of fused or dead burned spinel, magnesia and/or alumina aggregate, a lesser amount of reactive magnesia, and a small amount of an organic acid. When the cement is cast into the form of a lining in a furnace, cured, dried, and subjected to an initial metal melting run, a ceramically set or sintered crust is formed on the inner surface of the lining and a soft, friable zone adjacent thereto. This combination results in a superior lining in that when the inevitable cracks develop in the furnace lining, they can propagate only through the hard sintered inner facing of the furnace lining, terminating at the soft zone. The failure of the cracks to propagate completely through the lining prevents runout of the molten metal thus greatly extending the life of the lining.

3,751,572
PLANT FOR THE ELECTROSLAG REMELTING OF METAL

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Vladimir Konstantionovich Lebedev, ulitsa Engelsa, 25, kv. 12; Vitaly Mikhailovich Baglai, ulitsa Semanshko, 10, kv. 54/3; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv.34; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Nikolai Fedorovich Medvedenko, ulitsa Vernadskogo, 67, kv. 86; Igor Vladimirovich Pentegrov, Zadorozhny pereulok, 6, kv. 14; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, kv. 14; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5; Boris Borisovich Fedorovsky, ulitsa Mecnikova, 7a, kv. 26; Lev Andreevich Shurue, ulitsa Gagarina, 10/2, kv. 7, all of, Kiev; Jury Andreevich Schelkunov, Krasny prospekt, 96, kv. 14, Novosibirsk; Pavel Petrovich Loskutov, ulitsa Uritskogo, 17, kv. 8, Novosibirsk; Kim Moiseevich Khasin, ulitsa K. Marxa, 8/2, kv. 70, Novosibirsk; Jury Fedorovich Frolov, prospekt K. Marxa, 8/2, kv. 70, Novosibirsk, and Valery Vasilievich Saimin, ulitsa Zorge, 95, kv. 69,, Novosibirsk, all of U.S.S.R.

Filed Sept. 9, 1971, Ser. No. 179,047
Claims priority, application U.S.S.R., Nov. 13, 1970, 1487362; Sept. 11, 1970, 1467857
Int. Cl. H05b *3/60, 7/10*
U.S. Cl. 13—9 **6 Claims**

The present invention relates to the field of electrometallurgy and more particularly to a plant for the electroslag remelting of metal. According to the invention the plant is characterized by having consumable electrodes positioned in a mould at the apices of a rectilineal polygen and connected

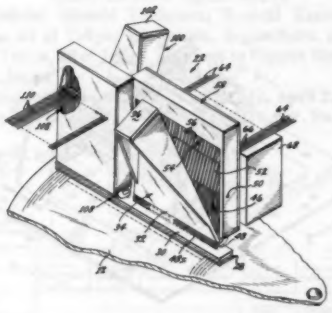


diametrically in pairs by current-carrying bridges. The present invention is suitable for melting heavy ingots of high-grace steels and alloys up to several hundreds of tons in weight.

3,751,573
MECHANICALLY KEYED OPTICAL ORGAN

Stephen Bartok, Gardena; Melvin R. Kennedy, Carson; George J. Klose, Redondo Beach; Edmund E. Landsinger, Torrance, and George W. Stewart, Costa Mesa, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 28, 1972, Ser. No. 293,217
Int. Cl. G10h *3/06*
U.S. Cl. 84—1.18 **16 Claims**

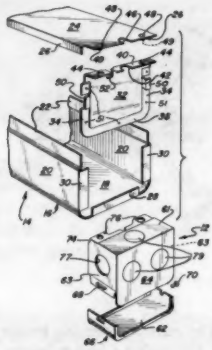


An optical organ of the type which shines light through the tracks of a rotating optical record onto photocell apparatus and which utilizes depressable keys to play selected tracks, wherein only one or a few photocells are required. The keys are connected to slideable rods that deflect small light control members positioned between the record and photocell. In one organ, the deflectable members are pivotally mounted shutters with corrugated side walls that interfit one another to prevent the leakage of light between the shutters. In another organ, the deflectable members are resilient light-conducting fingers formed in a sheet-like edge portion of a transparent member, each finger being deflectable to a position where its end can pick up light from a particular optical track and carry it to the photocell.

3,751,574
BALLAST CANNISTER CONSTRUCTION

Clarence E. Fisher, Roselle, Ill., assignor to Advance Transformer Co., Chicago, Ill.

Filed June 23, 1972, Ser. No. 265,597
Int. Cl. H05k 5/04
U.S. Cl. 174—52 R 6 Claims

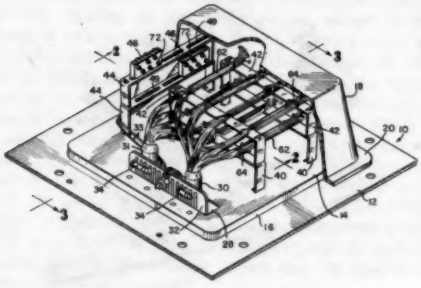


A ballast canister has its end wall provided with integral ears that are formed during fabrication of the end wall and provide confining guides for the flanges of a junction box attached to the canister.

3,751,575
GROUND LEVEL TERMINAL HOUSING

Earl C. Barb, Muncie, Ind., assignor to General Cable Corporation, New York, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,893
Int. Cl. H02g 9/00
U.S. Cl. 174—52 R 7 Claims

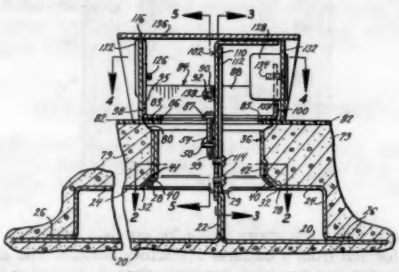


A telephone cable terminal housing adapted to lie flat on the level ground, without excavation. A ground plate has a wide flat ground engaging border and a raised central mounting platform joined by an upstanding wall forming an outward-facing peripheral shoulder. A bell jar cover fits over the platform with its continuous side wall close about and overlapping the peripheral shoulder to enclose equipment mounted on the platform. The platform has a cable entrance opening and forms a mounting base for cable terminal apparatus. This includes terminal strips each having a support bar and resiliently bendable integral legs with T-heads that snap into T-slots in the platform or into similar T-slots in the ends of previously mounted terminal strips. For cable-to-cable splicing, corresponding bundles of wires from the cables are brought together across the terminal strips in one or more tiers and the corresponding wires spliced together. Other wires connect selected cable wires to terminal blocks for service connection, to loading coils, etc. The terminal housing provides all the advantages of an above-ground terminal housing with improved access and as good or better production of the equipment therein, it avoids the difficulties and hazards of underground housings while its ground-level mounting and low silhouette minimizes its visual and physical obstruction of the ground area on which it is mounted.

3,751,576
PLURAL-CELL DUCT

Richard A. Klinkman, New Baden, Ill., and Louis E. Mueller, Fenton, Mo., assignors to Mac-Fab Products, Inc., St. Louis, Mo.

Filed Apr. 13, 1972, Ser. No. 243,792
Int. Cl. H02g 3/18
U.S. Cl. 174—48 38 Claims

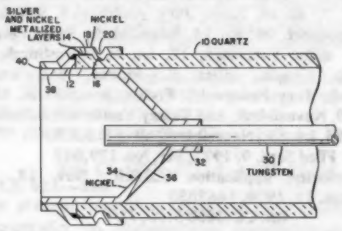


A plural-cell duct, embedded within a concrete floor, has openings spaced apart along the length thereof; and collars extend upwardly from those openings to help define potential passages extending from the cells of that duct to the surface of that floor. Each of those potential passages has a barrier therein which will effectively isolate one of the cells of that plural-cell duct from an adjacent cell. Whenever a support for an electrical fitting is to be secured to any of those collars, the barrier can be removed from the potential passage through that collar to free substantially the entire cross section of that passage of any – thereby facilitating the "fishing" of conductors through the plural-cell duct and that collar. Subsequently, a support for an electrical fitting will be secured to the collar; and that support will have a divider which will coact with a partition in the plural-cell duct to restore the isolation of the one cell from the adjacent cell.

3,751,577
SEAL FOR A HIGH PRESSURE, SHORT ARC GAS LAMP

Charles E. Rich, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 12, 1972, Ser. No. 261,858
Int. Cl. H01j 5/34, 61/36
U.S. Cl. 174—50.58 1 Claim



The invention concerns a reliable quartz-to-metal seal for use in a high pressure, short arc gas lamp, suh as for example,

that disclosed in Keller et al. U.S. Pat. No. 3,256,459. The seal involves a nickel ferrule to provide a long path nickel-to-quartz and nickel-to-tungsten seal.

3,751,578

METAL-CLAD THREE-CONDUCTOR HIGH-VOLTAGE TRANSMISSION LINE

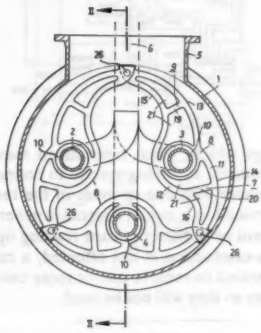
Fritz Hoffmann, Rheinheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 27, 1972, Ser. No. 238,405

Claims priority, application Germany, Apr. 8, 1971, P 21 18 176.0

Int. Cl. H01b 9/06, 17/18

U.S. Cl. 174—99 B **14 Claims**



The three conductors of the high voltage transmission line are arranged in triangular array within the metal-clad casing and are supported at longitudinally spaced apart points. At each support point, three insulator bodies are provided so that each conductor is supported by a single insulator body. Each insulator body surrounds one conductor, at least partially, and is attached at two points of the metal casing which are separated from each other by at least an angle of 90° relative to the periphery of the casing.

3,751,579

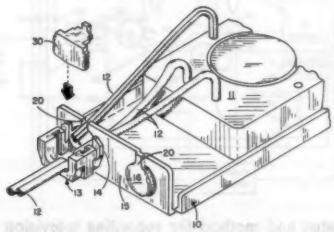
ELECTRICAL WIRING BUSHING WITH STRAIN RELIEF

Howard H. Nojiri, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 4, 1972, Ser. No. 223,630

Int. Cl. F16l 5/00; H01b 17/26

U.S. Cl. 174—153 G **12 Claims**



A bushing to protect and retain an electrical wire passing through an aperture in the side of an electrical box. The bushing is constructed to have a slot running parallel to its axis and a gate-like retaining means which is received crosswise of the slot to hold the wire in place. The bushing is especially adapted for use with an electrical box having an open slot in the aperture so that the bushing can be placed into the aperture and after it is in position, the electric wire or wires can be fed through the slot in the aperture and the bushing before the retaining means is placed in position. The bushing is made of a first portion which is received in the aperture of the box and a second portion containing the retaining means which are partially connected so that after the bushing is in place, the second portion can be deformed with a tool to allow removal of the retaining means.

3,751,580

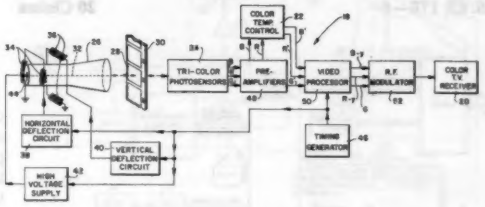
COLOR TEMPERATURE CONTROL FOR TELEVISION APPARATUS

Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,746

Int. Cl. H04n 9/12

U.S. Cl. 178—5.4 R **2 Claims**



Apparatus and method for compensating for color temperature variation in scene illuminants, image recordings, or image reproduction through optical-to-electrical and electrical-to-optical signal transducer apparatus. Color temperature control is effected through the inverse variation, with respect to each other, of at least two primary colors in a tri-color chromatic display.

3,751,581

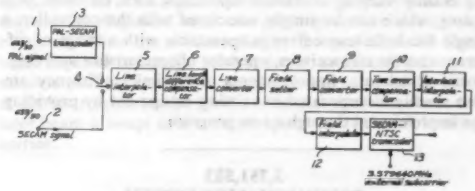
COLOR TELEVISION STANDARD SYSTEM CONVERTING EQUIPMENT

Haruo Sakata; Hiroshi Tanimura; Ryuichi Kaneko; Hideo Kusaka, all of Tokyo; Eiichi Sato, Sagamihara, and Tokuji Kubo, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Continuation-in-part of Ser. No. 818,341, April 22, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,216

Int. Cl. H04n 9/42

U.S. Cl. 178—5.4 C **10 Claims**



A system for converting color television signals from one standard system having a certain number of scanning lines and fields to a second standard system having a different number scanning lines and of fields, comprising the steps in a sequence of; line interpolation, line length compensation, line number conversion, field setting, field number conversion, time error compensation, interlace interpolation and field interpolation or in a sequence reverse thereto while using the SECAM type signal.

Most of the equipment used in each of the above steps are so constructed that the SECAM type composite color signal may be processed without modifying the signal in order to simplify the system. The respective equipment comprises delay

lines as the main constructive elements to stabilize the operation. In order to effectively utilize the delay element the desired interpolated signal is formed in the frequency domain by a combining means by using a frequency modulated signal, and by means of the same the discontinuity of the picture which will be or has been accompanied with the conversion of the number of lines or number of fields is compensated.

3,751,582

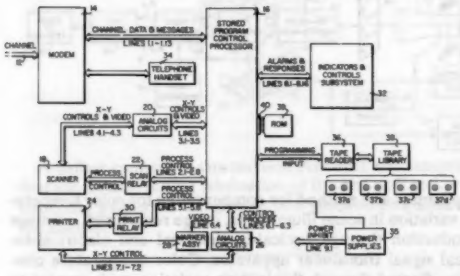
STORED PROGRAM FACSIMILE CONTROL SYSTEM

Robert E. Wernikoff, Joseph M. Van Horn, both of Cambridge, Mass.; Albert E. Mignone, deceased, late of Shaker Heights, Ohio, and by Gilda Mignone, executrix, 419 Nayatt Rd., Barrington, R.I., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Dec. 8, 1971, Ser. No. 206,066

Int. Cl. H04n *1/32*

U.S. Cl. 178—6 **20 Claims**



A facsimile transceiver system incorporating a stored program controller. The stored program controller provides operational control of a scanner and a printer mechanism in conjunction with a communication channel for transmitting and receiving facsimile signals and a condition indicator display for presenting transceiver condition information. The scanner and printer are made to operate with a variety of different formats of control and data signals from a remote facsimile system by associating an appropriate program with the controller. This program instructs the controller to process the control and data signals passing through it between the channel, and scanner and printer in a manner that causes the local facsimile system to operate compatibly with other facsimile equipment at the remote end of the communication channel. By readily varying controller operation with different programs, which can be simply associated with the controller, a single facsimile transceiver is operatable with a range of different remote transceivers, operator characteristics and diagnostic checkouts. Improvements in facsimile efficiency are also readily incorporated in existing equipment by providing the improvement through a new program.

3,751,583

COMMUNICATION SYSTEM

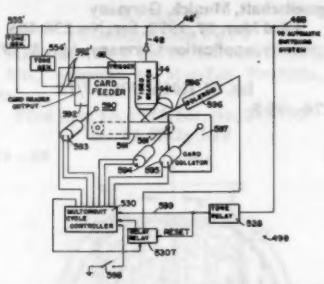
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation of Ser. No. 823,600, May 12, 1969, Pat. No. 3,705,973, which is a continuation-in-part of Ser. No. 279,031, April 1, 1963, abandoned, which is a continuation-in-part of Ser. No. 723,075, Feb. 28, 1958, Pat. No. 3,084,213, and a continuation-in-part of Ser. No. 225,173, Aug. 27, 1962, which is a continuation-in-part of Ser. No. 668,348, Sept. 23, 1957, Pat. No. 3,051,777. This application Dec. 11, 1972, Ser. No. 313,656

Int. Cl. H04l *11/06, 11/15*; H04n *1/32*

U.S. Cl. 178—6 **10 Claims**

An automatic communication system and method for generating information recorded on record cards by automatically reading individual cards, and transmitting the information generated as electrical signals to one or more receiving stations where it is automatically recorded. The system includes means for automatically effecting a communication link between the output of the card reader and a selected receiving station and, after automatically establishing that the communication link is in effect, the card reader is controlled to read the information recorded on selected cards fed thereto. In a particular form, at least certain of the cards read



contain recordings which, when reproduced therefrom, are applied to an automatic switching system to connect the output of the card reader with one or more of the receiving stations. When a connection is made, a signal is generated which is applied to control or initiate the card reading operation. In another form if a connection is not effected, a card rjection mechanism is operated to remove one or more cards from the feeding mechanism so they will not be read.

3,751,584

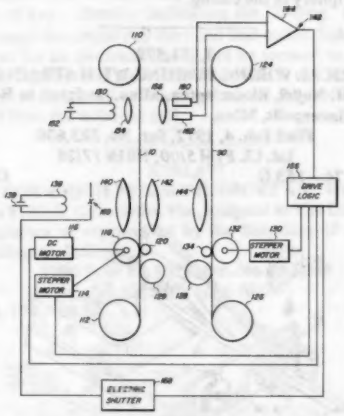
TELEVISION SIGNAL TO PHOTOGRAPHIC FILM RECORDING SYSTEM

Royce D. Pickering, and David M. Glassman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 28, 1971, Ser. No. 166,887

Int. Cl. G03b *41/00*; H04n *5/88*

U.S. Cl. 178—6.7 A **9 Claims**



An apparatus and method for recording television scenes onto photographic film in a format suitable for use in conventional optical motion picture projectors. A beam splitter is used to simultaneously record the scanning spots of a TV signal onto two adjacent frames of an intermediate, continuously running film such that two fully interlaced TV fields are recorded on every frame of the intermediate film. Selected frames from the intermediate film are then printed onto conventional photographic motion picture film in a format which can then be used in conventional optical motion picture projectors.

3,751,585

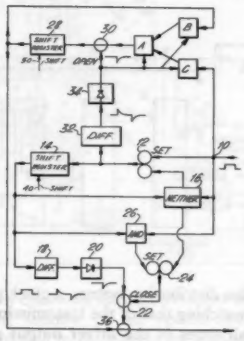
COUNTING SYSTEMS IN IMAGE ANALYSIS EMPLOYING LINE SCANNING TECHNIQUES

Colin Fisher, Meldreth House Meldreth, Royston Hertfordshire, Boyston, England

Continuation-in-part of Ser. No. 821,180, April 29, 1969, Pat. No. 3,619,494. This application July 12, 1971, Ser. No. 161,844

Int. Cl. H04n 7/02

U.S. Cl. 178—6.8 2 Claims



The invention provides for the use of so-called shift registers in feature counting and measuring image analysis apparatus.

3,751,586

CIRCUIT SYSTEM FOR COMPENSATING THE INFLUENCE OF THE BACK-GROUND RADIATION ON THE PICTURE DISPLAY IN AN INFRA-RED CAMERA

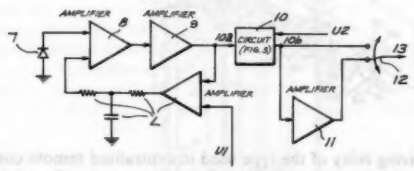
Bengt Henri Johansson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 22, 1970, Ser. No. 82,990

Claims priority, application Sweden, Oct. 29, 1969, 14774/69

Int. Cl. 250 ; H04n 5/19

U.S. Cl. 178—7.1 6 Claims



In an infra-red (IR) camera system a scene is line scanned to provide a video signal which includes a picture signal representing the object being monitored and background signal representing the temperature changing background region. Portions of the video signal are controllably sensed during particular times of the line scans to generate a compensating signal which is superimposed on the video signal to minimize effects of the changing background signal on the average value of the picture signal.

3,751,587

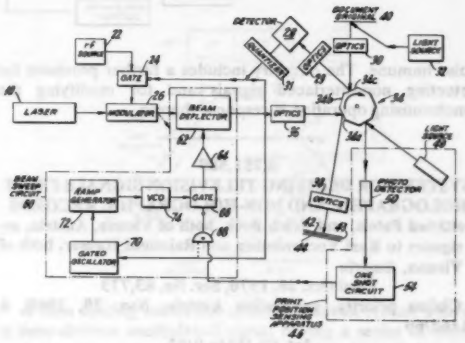
LASER PRINTING SYSTEM

Julius R. Insler, Bergenfeld; Allen R. Leslie, Baldwin, and Ronald J. Vigneri, Midland Park, all of N.J., assignors to Saxon Industries, Inc., New York, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,239

Int. Cl. H04n 1/10

U.S. Cl. 178—6.6 R 23 Claims



A modulated laser beam developed in a non-contacting printing arrangement sweeps across an ink bearing carrier disposed adjacent a printing surface, e.g., an untreated paper sheet. In successive line sweeps, each slightly displaced from the prior sweep line, the incident laser beam selectively transfers printing materials, such as ink, from the carrier to the paper surface in accordance with the laser modulation intelligence. The modulator reduces or shutters the laser beam in such manner as to prevent ink transfer where printing is not desired and allows the laser beam to pass or directs the laser beam to points where printing is desired. Printing speed for the composite printing system directly depends upon the rate at which ink can be displaced from its carrier, and therefore ultimately upon laser power. In a copying machine context, the laser modulating information is developed by scanning the original document to be reproduced.

In accordance with the present invention, the laser beam is alternately accelerated and slowed with respect to the average sweep rate across the ink bearing carrier during printing to essentially dwell at such points on the carrier where it is desired that ink be displaced ohto the printing surface during the sweep of a line trace. Accordingly, the power of the laser beam required to transfer ink is reduced, and thereby also permissible printing speeds are increased, by reason of the swell of the laser beam on the ink vis-a-vis that situation where the laser beam is swept at a constant speed acros the ink bearing carrier.

3,751,588

VERTICAL SYNCHRONIZING CIRCUITRY

Robert Roy Eckenbrecht, Bethany, and Dong Woo Rhee, Williamsville, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

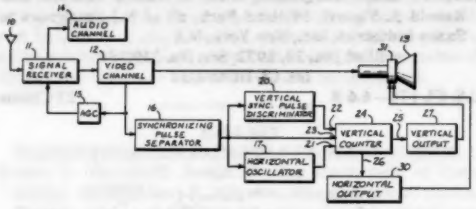
Filed June 2, 1972, Ser. No. 259,159

Int. Cl. H04n 5/10

U.S. Cl. 178—7.3 S 24 Claims

A vertical synchronizing circuit including a counter is shown. The counter counts a predetermined number of pulses synchronized with the received television signal, such as the horizontal oscillator output pulses, and then recycles provid-

ing a vertical output pulse. The circuitry includes a provision for periodically synchronizing the counter which is highly



noise immune. The circuitry includes a further provision for detecting non-interlaced signals and for modifying the synchronizing operation in response thereto.

3,751,589

SYSTEM FOR DERIVING TELEVISION SIGNALS FROM HOLOGRAPHIC AND NON-HOLOGRAPHIC RECORDS

Gottfried Patels, and Erich Beck, both of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Oct. 26, 1970, Ser. No. 83,773

Claims priority, application Austria, Nov. 28, 1969, A 11162/69

Int. Cl. H04n *9/02*

U.S. Cl. 178—5.4 R **19 Claims**

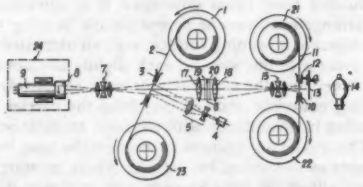


Image-forming means for producing in an image plane a first image, which is derived from a holographic record, comprise a source of monochromatic light for illuminating a holographic record disposed in a predetermined second plane, and a first optical system for deriving said image from the light from said holographic record thus illuminated. The system comprises image-presenting means, which serve to provide a second image from a non-holographic record and television signal-producing means which comprise a television camera for deriving television signals from said image in said image plane and said second image.

3,751,590

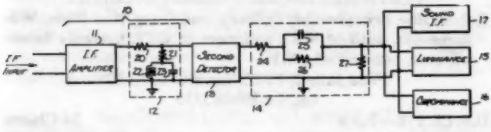
SINGLE SECOND DETECTOR SYSTEM FOR A COLOR TELEVISION RECEIVER

Robert B. Dome, Syracuse, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Feb. 3, 1971, Ser. No. 112,136

Int. Cl. H04n *9/12*

U.S. Cl. 178—5.4 R **4 Claims**



A color television receiver circuit which by unique proportioning of the transfer characteristics before and after a single second detector it is possible to render tish and 920 KC picture disturbances invisible without resorting to prior techniques for exalting the carrier.

3,751,591

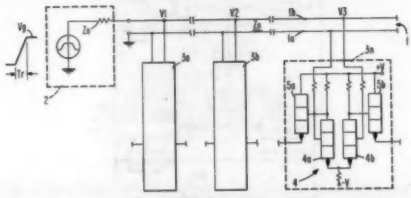
ZERO SKEW CLOCK DISTRIBUTION SYSTEM

Jerry K. Radcliffe, and Gerald W. Whalen, both of Owego, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1972, Ser. No. 264,674

Int. Cl. H04l *15/00*

U.S. Cl. 178—68 **8 Claims**



In a clock pulse distribution system, a clock pulse driver has an impedance matching that of the transmission line it drives. The rise and fall times of the driver output pulses are slow relative to the line delay time so that all circuits coupled to the line respond to the pulse transitions simultaneously, eliminating skew in the system.

3,751,592

REMOTE CONTROL RECEIVER

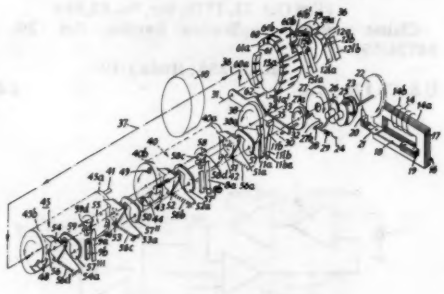
Louis Blouin, Malakoff, France, assignor to Compteurs Schlumberger, Montrouge, France

Filed Mar. 22, 1972, Ser. No. 237,009

Claims priority, application France, Mar. 22, 1971, 7109980

Int. Cl. H04l *15/24*

U.S. Cl. 178—88 **8 Claims**



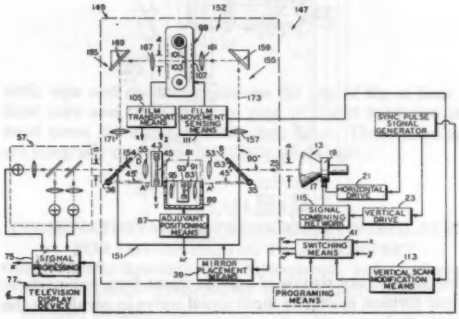
Receiving relay of the type used in centralised remote control systems in which a single emitter, without any pilot wires, sends telegrams of orders over the electrical energy mains distribution network. These telegrams of orders are received in synchronisation by one or several receiving relays having a vibrating reed and connected in parallel on the mains network. The pulses are formed by modulating a carrier and are superimposed on the mains. The relays are able to decode optionally at least two sorts of telegrams distinguished by a starting pulse which may be short or long. The receiving relay comprises a vibrating reed frequency selector for detecting the first pulse of the telegram of orders to as to actuate a trip lever closing an energisation circuit passing through a starting cam for controlling contacts for supplying a motor with power.

3,751,593

MULTIPLEX IMAGE ACCOMMODATION SYSTEM

Thaddeus V. Rychlewski, and Louis R. Wanner, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,825
Int. Cl. H04n 5/36
U.S. Cl. 178—7.2 7 Claims



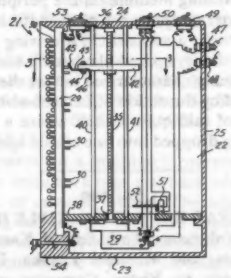
The invention concerns an improvement in the film image accommodation section of an optical-to-electrical image transducer employed in the system for displaying film images on the screen of a television display device. The improved image accommodation section includes two related optical systems, each being expeditiously modifiable to handle a plurality of image areas and film media. A moving beam of scanning light is directed to at least one of the optical systems by pivoted reflective means; the designate positioning of which is determined by placement means activated by selective switching means. The output beam of modified optical information is directed to a signal conversion section, and thence applied to the television display device.

3,751,594

TELEPHONE ALARM

John Strother, 175 W. 137th St., New York, N.Y.

Filed May 18, 1972, Ser. No. 254,549
Int. Cl. H04m 11/04
U.S. Cl. 179—5 P 1 Claim



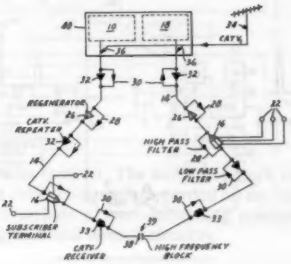
A telephone alarm in which when triggered by the breaking or making of an alarm circuit raises the receiver of the telephone, dials a police or fire number and plays a recording over the telephone giving the necessary information concerning the energency. A timer is provided for rendering the alarm operative during certain periods of a day and inoperative during other periods of the day to permit normal ingress and egress without triggering the alarm.

3,751,595

TIME SHARING SUBSCRIBER COMMUNICATIONS SYSTEM

Donald W. Moses, Troy Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company

Continuation-in-part of Ser. No. 17,367, March 9, 1970, Pat. No. 3,647,976. This application Mar. 6, 1972, Ser. No. 232,096
Int. Cl. H04j 3/08, 3/12
U.S. Cl. 179—15 AL 5 Claims



A time sharing subscriber communications system wherein a time-division multiplexed signal having a series of frames and a predetermined number of time slots in each frame, is carried from a transmitter terminal over a single communications circuit containing a plurality of series connected subscriber terminals. At the transmitter terminal, information corresponding to input signals received from various input channels is placed in the time slots in the series order of the subscriber terminals. At each of the subscriber terminals the information contained in a set of one or more time slots of each frame related to that subscriber terminal is tapped-off and the other information is retransmitted over the circuit along with new information provided at the subscriber terminal in the last set of time slots. Thus, the information for the succeeding subscriber terminal occupies the first set of time slots in each frame of the retransmitted signal, and all of the subscriber terminals may be of identical construction in respect to identifying within each frame, the set of time slots related thereto.

In a communications system wherein a pulsed signal, containing audio information derived from an audio input signal within a first frequency range, and supervisory information derived from a supervisory input signal at a second frequency outside the first frequency range is demodulated to provide a composite signal containing both the audio information within the first frequency range and the supervisory information at the second frequency, a synchronous detector is used to produce an output signal corresponding to the supervisory information whenever the composite signal contains second frequency components in synchronism with the pulsed signal.

3,751,596

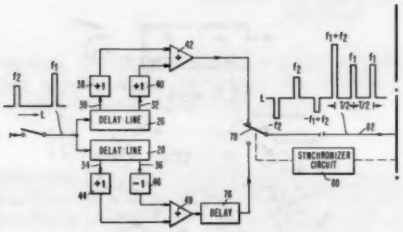
DATA TRANSMISSION SYSTEM USING COMPLEMENTARY CODING SEQUENCES

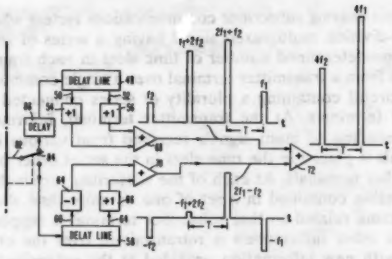
Samuel C.-C. Tseng, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1971, Ser. No. 202,940
Int. Cl. H04j 3/00
U.S. Cl. 179—15 BC 10 Claims

A data transmission system for transmitting information over a plurality of channels or for multiplexing different information on a single channel is described. The system includes a transmitting station where input data signals are linearly transformed into a complementary pulse sequence and transmitted to a receiving station wherein the transmitted pulses are inversely transformed to recover the original signals. The recovered signals are larger in amplitude than the original input signals by a factor dependent on the number of information channels

in the system. Any noise introduced during transmission is not made larger in amplitude with the result that the signal to noise ratio of the received signals is improved. The input signals are supplied to a plurality of encoding devices at the transmitter. The encoding devices include tapped delay line devices having multipliers at the taps that multiply the tapped signals by a plus or minus factor in accordance with the code. The multiplied signals are then combined to produce a pulse sequence which is transmitted to the receiving station. At the





receiving station the pulse sequence is applied to a plurality of decoding devices. The decoding devices include tapped delay line devices having multipliers at the taps which multiply the tapped signals by a plus or minus factor according to a code which is complementary to the code used at the transmitting station. The multiplied signals are then combined to recover the original input signal which is increased in amplitude by a given factor. The system may be embodied in acoustic surface wave structures wherein the encoding and decoding devices are interdigital transducers.

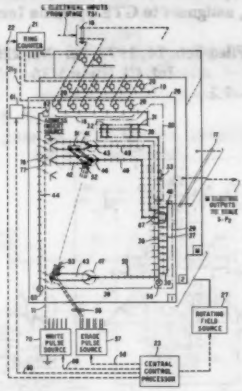
3,751,597

TIME DIVISION MULTIPLEX NETWORK SWITCHING UNIT

Peter Istvan Bonyhard, Edison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 30, 1971, Ser. No. 214,269
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ **13 Claims**

A time slot interchanger has an input signal delay path of selectable delay coupled to an input thereof. An input signal converter receives, in electrical form, different time division multiplex input signals in parallel and applies them, in magnetic single-wall domain form, to the time slot interchanger input in series through the selected delay for that interchanger. A plurality of such switching units are interconnected at corresponding signal positions of their respective converters; and the converters of the respective interchangers are controllably enabled to respond to the electrical signals in sequence in different time slots of the time division multiplex input signals. The time slot interchanger input delays are selected in accordance with the converter enabling sequence,



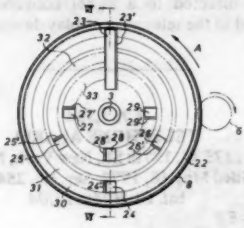
so that all time slot signals of a single frame from any particular time division multiplex input signal arrive in parallel at the inputs to their respective time slot interchangers.

3,751,598

MAGNETIC RECORD-PLAYBACK DEVICE

Shigetaro Muraoka, 2-28 Osaki 2-chome Shin, Tokyo, Japan

Filed Aug. 12, 1971, Ser. No. 171,085
Claims priority, application Japan, Jan. 27, 1971, 46/2838 (utility model)
Int. Cl. G11b *5/82, 23/18, 23/32*
U.S. Cl. 179—100.2 MD **1 Claim**



A magnetic record-playback device consisting of a disk having magnetic recording medium on the periphery thereof and having one or more of apertures; a magnetic record-playback head; a main switch; a sub-switch; a driving system for said disk and other ordinary record-playback means including amplifier etc., and being characterized in that the rotation of said disk being started by the action of said sub-switch and stopped by the opening of said main switch where a contact of said main switch being dropped into one of said apertures.

3,751,599

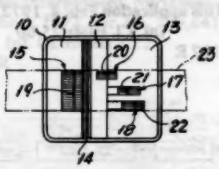
MAGNETIC HEAD HAVING MULTIPLE HEAD CORES

Hiroshi Ogawa, Yokohama; Toshi Suzuki, Kamakura; Tadashi Suzuki, Yamato, and Mitsuaki Tanaka, Fujisawa, all of Japan, assignors to Victor Company of Japan Ltd., Kanagawa-ku, Yokohama-City, Kanagawa-ken, Japan

Filed Nov. 22, 1971, Ser. No. 200,787
Claims priority, application Japan, Nov. 24, 1970, 45/103960; Dec. 31, 1970, 45/138684; Feb. 26, 1971, 46/11279
Int. Cl. G11b *5/28*
U.S. Cl. 179—100.2 C **4 Claims**

A multi-head core magnetic head comprises at least one head core having a gap of a relatively large gap width and at

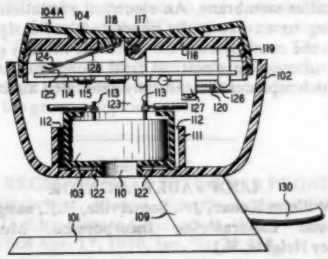
least two other head cores having gaps of gap width respectively smaller than that of said one head core. The at least two other head cores are disposed at positions at which they can trace a track made by the at least one head core on the magnetic tape and distances between the gap of the at least one head core and the respective gaps of the at least two other head cores are different from each other. These head cores are integrally assembled in a single shield case.



3,751,600
COMBINATION MICROPHONE AND CONTROL STAND FOR LOUDSPEAKING TELEPHONE SET

George Willis Reichard, Jr., Indianapolis, Ind., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 22, 1971, Ser. No. 210,642
Int. Cl. H04m *1/62, 1/20*
U.S. Cl. 179—100 L 3 Claims



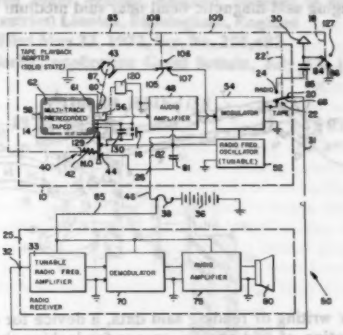
In a combination control stand and microphone support structure for a loudspeaking telephone set, an omnidirectional microphone is mounted within a pedestal supported body portion with the top thereof providing a base for control switch actuating buttons, the microphone being entirely hidden from view with its face pointing downwardly at the desk top or other supporting structure.

3,751,601
TAPE PLAYBACK FOR PLAYING THROUGH A RADIO RECEIVER

Harry W. Wally, 36 Plaza St., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 663, Jan. 5, 1970. This application Nov. 17, 1971, Ser. No. 199,477
Int. Cl. G11b *31/00*
U.S. Cl. 179—100.11 12 Claims

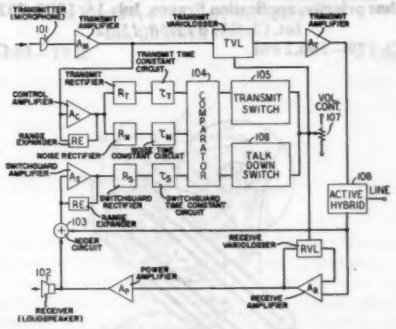
A playback system for a multitrack prerecorded tape cartridge or cassette includes a tape playback adapter for inserting the cartridge or cassette therein. The adapter includes a motor for driving the tape, a magnetic head for picking up audio signals from the tape, both a manual switch and an automatic switch (actuateable by the cartridge insertion) for selecting a particular track, a channel (track) indicator, an audio amplifier to amplify the picked up audio signals, a tunable radio frequency oscillator for generating a carrier, and a modulator for modulating the audio signals on the oscillator. The modulator is connectable via an automatic selector switch also (actuateable by the cartridge insertion) to the radio frequency input terminal of an amplitude or frequency modulated radio broadcast receiver. A radio frequency antenna is also connectable to the radio frequency input terminal via the selector switch. An antenna ground switch also actuateable by the cartridge insertion. Both radio receiver and adapter are energized by a battery power supply connected to both the adapter and radio receiver. The automatic track switch is actuateable by a conducting surface carried on the tape, and the track switches include a spark-supressing condenser across their opposing electrical termals circuitry.



3,751,602
LOUDSPEAKING TELEPHONE

Robert Louis Breeden, Carmel, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 13, 1971, Ser. No. 171,550
Int. Cl. H04m *1/60*
U.S. Cl. 179—81 B 6 Claims



In a loudspeaking telephone employing a control circuit to achieve complementary switched gain in the transmit and receive channels, the timing means associated with the gain switching provides for a fixed relatively fast attack time and a variable or adaptive release time dependent upon the presence or absence of speech signals in the receive channel when a transmit speech signal terminates. Improved mode transition and particularly effective talk-down action results.

3,751,603
DEVICE FOR CONTROLLING MAGNETIC HEAD DISPLACEMENT

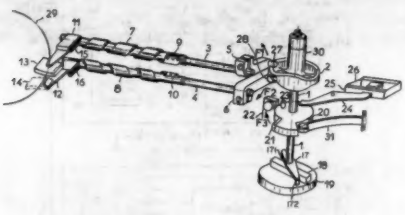
Lucien Robert Prieur, Ecouen, and Hubert Cecyl Albert Rousseau, Meudon, both of France, assignors to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France

Filed Jan. 24, 1972, Ser. No. 219,956
Claims priority, application France, Feb. 5, 1971, 7103902
Int. Cl. G11b *5/54*
U.S. Cl. 179—100.2 CA 9 Claims

A device for controlling at least one magnetic head in an apparatus for writing and reading data on and out a magnetic medium.

Said device is equipped with a spindle actuating at least one cam cooperating with at least one arm equipped with a spring attached by one of its ends to this arm and by the other end in contact with the magnetic head in such a way as to be capable of bringing said magnetic head near said medium into a position for writing or reading said data, a device for controlling the rotation of said spindle, means for locking the magnetic head in said position and means for releasing the magnetic head, so that it may be moved away from said medium.

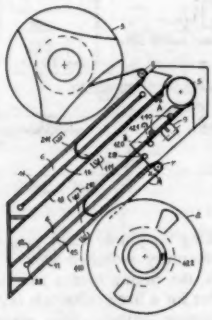
Said device is utilizable with magnetic disk memories.



3,751,604
AUTOMATIC CONTROL SYSTEM FOR LOADING AND UNLOADING MAGNETIC TAPES IN DIGITAL RECORDER EQUIPMENTS

Fernand Calizzano, Groslay; Michel Chauvel, Chatenay-Malabry; Jean Mailiere, Antony, and Jean Rybner, Paris, all of France, assignors to Compagnie Internationale pour L'Informatique, Louverciennes, France

Filed July 12, 1971, Ser. No. 161,436
Claims priority, application France, July 15, 1970, 7026002
Int. Cl. G11b *15/58, 15/52*
U.S. Cl. 179—100.2 PM **14 Claims**

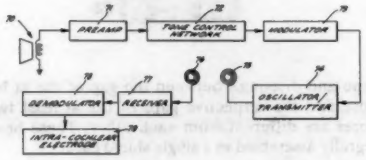


An automatic control system for loading and unloading a magnetic tape receiver coil from and to a delivery coil in a digital recorder equipment having a tape driving capstan at an intermediate location between upstream and downstream depression wells having outlets connected to a main suction duct comprises means in such a connection for enabling selective applications of reduced depressions and/or outer atmosphere pressure to said wells and a hardwared programme arrangement which is monitored from the response of sensors detecting the presence or absence of the magnetic tape at a number of selected positions along its normal path between the delivery and receiver coils for ensuring, during a loading operation, an automatic formation of magnetic tape loops within said wells and, during an unloading operation, an automatic release of such loops from said wells, and for controlling the ends of both loading and unloading automatic operations.

3,751,605
METHOD FOR INDUCING HEARING

Robin P. Michelson, Redwood City, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 75,076, Sept. 24, 1970, abandoned. This application Feb. 4, 1972, Ser. No. 223,416
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 R **9 Claims**

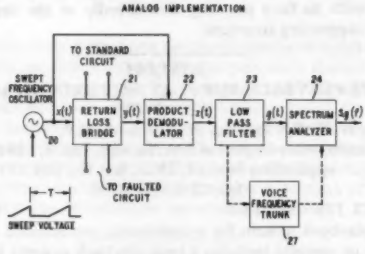


There is disclosed a method for inducing the sensation of intelligible hearing by direct electrical excitation of the auditory nerve endings distributed along the basilar membrane within the cochlea. An electrode is positioned within the lower scala of the cochlea by insertion through the round window. The electrode consists of a resilient base member shaped to conform to the inner surface of the lower scala, such base member extending along the basilar membrane. The base member retains a pair of conductors which extend parallel to the length of the basilar membrane. An electrical excitation signal corresponding to an externally generated audio signal is conducted to the conductors of the electrode thereby generating a uniform, alternating electrical field along the basilar membrane which replaces the naturally generated auditory electrical field.

3,751,606
LOOP FAULT LOCATOR

Charles William Kaiser, Jr., Somerville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 29, 1971, Ser. No. 213,663
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **6 Claims**

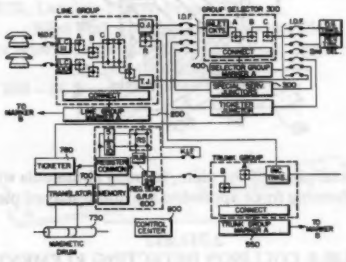


A fault on a telephone cable pair which may contain other impedance irregularities is located by a frequency-domain distance detection system. The difference between the input impedance of the circuit which contains the fault and a standard impedance is measured periodically across a set of predetermined frequency bands to produce a corresponding set of periodic time functions. The power spectra of these functions are determined, and the frequencies of the spectra mamima are used to estimate the distances to all of the impedance irregularities (including the fault) from the measurement point.

3,751,607
METHOD OF CONTROL OF LINE CIRCUIT CUTOFF RELAY

Charles A. Pleasance, Palatine, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 5, 1972, Ser. No. 259,641
Int. Cl. H04m *3/22*
U.S. Cl. 179—175.2 R 5 Claims

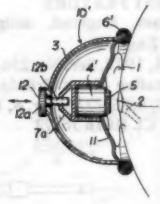


An arrangement for remotely controlling a line circuit cutoff relay including diodes through which the "C" lead of each line circuit is connected to a common wire attached to an isolated battery or power supply, with the latter further being connected to each test board or wire-chief test trunk and each terminating junctor. Each terminating junctor also is provided with a relay (KO) which responds to a + potential from the isolated battery. As soon as the KO relay operates, it connects the incoming "EC" lead to the outgoing "C" lead. The incoming remote test circuit, that is, the wire chief junctor, is arranged to connect + potential from the isolated battery to the "EC" lead to the group selector matrix.

3,751,608
SOUND RECEIVER HEAD SET OR EAR PHONE

Bernhard Weingartner, Vienna, Austria, assignor to AKG Akustische U. Kino-Gerate Gesellschaft, Wien, Austria

Filed Apr. 17, 1970, Ser. No. 29,492
Claims priority, application Austria, Apr. 25, 1969, A 4038/69
Int. Cl. H04r *1/10*
U.S. Cl. 179—182 R 2 Claims

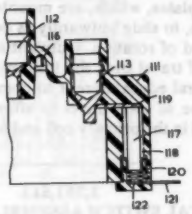


A sound receiver head set or ear phone includes an ear piece housing of generally semi-spherical shape having an annular padded edge which is adapted to be located against the head of a user around the ear. The housing defines a guide for a transducer system which has an acoustic inlet which may be oriented at a selected location in respect to the auditory meatus of the wearer. The housing carries adjusting means for regulating the position of the transducer and the acoustic outlet so that it is at a desired spacing or gap from the ear. The guide way defined in the housing for the transducer is advantageously oriented at an optimum angle in respect to the ear of the wearer in respect to a tangent to the head of the wearer and in addition the adjustable means permits its inner and outer movement in respect to the ear for the precise definition of the volume of an interreaction gap defined between the acoustic outlet of the transducer and the auditory meatus of the ear.

3,751,609
IGNITION DISTRIBUTOR CAP WITH ISOLATED CAPACITOR AND RESISTOR

Norman Alfred Jukes, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 22, 1972, Ser. No. 255,482
Claims priority, application Great Britain, July 12, 1971, 27,661/71
Int. Cl. H01h *1/58*
U.S. Cl. 200—19 DC 5 Claims

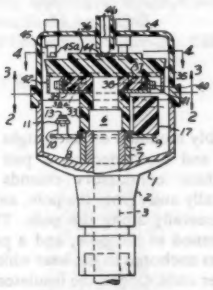


The ignition distributor cap comprises an insulating body carrying an input terminal and a series of output terminals for successive contact by a rotor arm of the distributor. A connector forms with the input terminal a capacitor the dielectric of which is the material of the body. A resistor is connected to one of the output terminals and to a further connector.

3,751,610
IGNITION DISTRIBUTOR

Othniel A. Bednarz, 1340 Northwood Dr., Inkster, Mich.

Filed May 17, 1972, Ser. No. 253,976
Int. Cl. H01h *19/12*
U.S. Cl. 200—19 R 6 Claims



An ignition system for internal combustion engines, incorporating an improved rotor. The rotor is annular in form, and non-conductive. It is formed with slideways extending diametrically from its axis of rotation, and opening downwardly throughout their length. Non-conductive slide elements are received in the slideways, and on their bottom faces carry transmitter plates. The transmitter plates are substantially triangular in form with the wide end of the triangle extending inwardly toward the axis of rotation. On its outer end face, each slide carries a spring. A grounding ring depends from the rotor and encircles the slideways so that the springs bear on the inner peripheral surface of the ring, normally urging the slide elements in toward the axis of rotation. A set screw extends through the ring and the rotor to contact the distributor shaft, and establish electrical contact between ring and shaft.

A brush housing is disposed beneath the rotor, and a brush, socketed in the housing is urged upwardly by a spring to have sliding contact with the bottom faces of the rotor, sliding elements, and transmitter plates, which are co-planar. The brush

has electrical communication with the primary winding of a coil, and the necessary, usual electrical circuitry, and a source of electrical current, are present to render the ignition system operable.

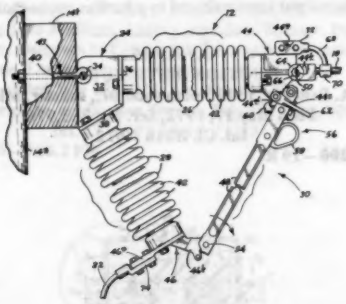
Contact of the brush with the transmitter plates closes a circuit to the primary winding of the coil, and the duration of such contact, of course, determines the strength of the spark reaching a spark plug. Obviously, as speed of rotation increases, the duration of contact decreases and the strength of spark is diminished. To compensate for increased speed of rotation, the present invention provides triangularly shaped transmission plates, which, are mounted on, and beneath the slide elements, to slide outwardly as centrifugal force intensifies with speed of rotation. Outward sliding travel disposes a longer path of travel over the transmission plates, due to the diverging lateral edges thereof to compensate in part for the decreased time of such travel to afford a longer build-up of magnetic field in the primary coil and hence a stronger spark.

3,751,611

ELECTRICAL SWITCH ASSEMBLY WITH TENSION-TRANSMITTING INSULATOR

Charles E. Kerr, Jr., Hillsboro, Oreg., assignor to Eltec, Inc., Portland, Oreg.

Filed May 17, 1971, Ser. No. 144,060
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 R **7 Claims**



A switch assembly mounted on an upright pole for electrically connecting and disconnecting a pair of conductors, where one of these conductors extends under tension generally horizontally away from the pole, and the other conductor extends generally along the pole. The assembly includes a base fastened to the pole, and a pair of elongated diverging insulators anchored to the base which carry a switch adjacent their outer ends. One of the insulators is substantially axially aligned with the tensed conductor, and serves to transmit tension between this conductor and the pole.

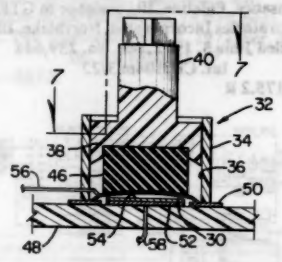
3,751,612

SNAP ACTION CAPACITIVE TYPE SWITCH

Wray C. Hansen, Arvada, Colo., assignor to Colorado Instruments, Inc., Broomfield, Colo.

Filed Aug. 30, 1971, Ser. No. 175,941
Int. Cl. H01h *35/00*; **G08c** *5/00*
U.S. Cl. 200—52 R **7 Claims**

Electrical signaling device in the form of a capacitor or condenser having a fixed plate and a generally dome-shaped snap action plate which may be deformed toward the fixed plate, wherein the dome-shaped plate, when in its normal or relaxed state, is in the form of a hollow geometric solid having an open polyagonal base with a planar side wall extending from each side of the base at equal angles thereto toward each other and are joined by an arcuate surface, the base having arcuate corners bent to extend from the opposite side of the base as the side walls. When the number of sides equals three, it has a base which has the general shape of an equilateral triangle with apexes which are arcuate, the latter being bent angularly



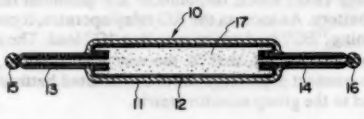
to the general plane of the plate, forming abutments which resist the deforming force applied to the dome-shaped plate.

3,751,613

BREAKABLE COLLISON DETECTING ELEMENT FOR AUTOMOBILES

Fumiyuki Inose, Kokubunji; Masahiro Takahasi, Hachioji, and Takemi Aida, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1972, Ser. No. 239,189
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.08 **19 Claims**



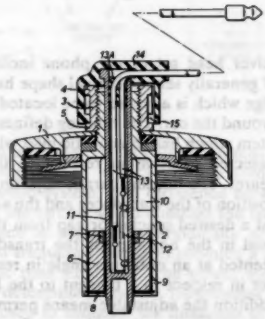
A cylindrical glass tube is provided with two metal lead tubes deposited respectively at both ends thereof and has a metal film formed on the inner surface thereof by an electrodeless plating technique; the cylindrical tube is evacuated or charged with an inert gas, to thus provide a breakable collision detecting element.

3,751,614

FLUID LEVEL INDICATING DEVICES WITH PULL TO TEST FEATURE

Peter Jones, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed May 24, 1972, Ser. No. 256,301
Claims priority, application Great Britain, May 26, 1971, 17,234/71; Feb. 15, 1972, 6,951/72; Mar. 6, 1972, 10,425/72
Int. Cl. H01h *36/02*
U.S. Cl. 200—84 C **10 Claims**



A fluid indicating switch is provided with a test feature. A closure cap assembly having magnetically actuated switch

means and a magnetic fluid level responsive means is attached to a fluid reservoir. The fluid level responsive magnetic means will actuate the switch in response to changes in the reservoir fluid level or by manual pull upon the cap assembly.

3,751,615

PRESSURE-OPERATED TAPE SWITCH

Maurice De Loisy, Paris, France, assignor to Etablissements TORRIX, Levalois-Perret, France

Filed Mar. 10, 1972, Ser. No. 233,556
Claims priority, application France, July 7, 1971, 7124778
Int. Cl. H01h *13/16*
U.S. Cl. 200—86 R **6 Claims**

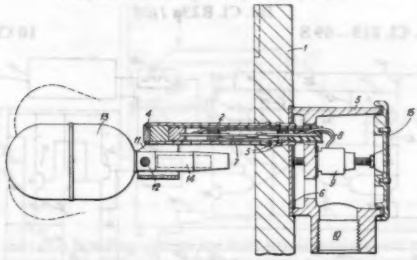
A pressure-operated tape or ribbon switch suitable for use for detecting the presence of an occupant of a seat in a motor vehicle when this switch is secured to the underside of the seat. The switch comprises a pair of elongate contact blades with pairs of spaced aligned holes at regular intervals along the longitudinal axis of the switch. Insulating studs are molded to the blades at the holes for riveting the latter together and normally maintaining the blades in spaced apart relationship. Contact is possible by direct or indirect pressure forces exerted on the switch.

3,751,616

FLOAT SWITCHES

Robert Innes, Beaconsfield, and Norman West, High Wycombe, both of England, assignors to Ronald Trist Controls Limited, Slough, England

Filed June 28, 1972, Ser. No. 267,221
Claims priority, application Great Britain, July 21, 1971, 34,250/71
Int. Cl. H01h *35/18*
U.S. Cl. 200—84 C **7 Claims**



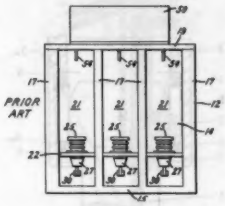
An electrical switch assembly, for measuring liquid levels or flow, has a mounting plate which is arranged to be fitted to a container wall to seal an aperture through the wall; a tube which is made of a non-magnetic material, which extends through and is sealed in a bore in the plate, and which has its end on the wet side of the plate sealed; a sensing element which is arranged to be moved by the liquid in the container and a magnet which, with the sensing element, is pivotally mounted on the wet side of the mounting plate; a magnetically responsive switch contact unit within the tube and responsive to movement of the magnet upon movement of the sensing element; and a terminal housing mounted on the dry side of the mounting plate and incorporating terminals connected to the switch contact unit.

3,751,617

VACUUM TYPE CIRCUIT BREAKER

Arthur L. Bohlinger, Newtown Square, and Richard H. Miller, Berwyn, both of Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed June 14, 1972, Ser. No. 262,582
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **5 Claims**



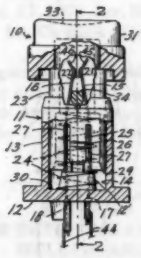
For converting a particular existing oil circuit breaker into a vacuum-type circuit breaker, a conversion assembly is provided which can be easily incorporated into the circuit breaker after the circuit breaker has been stripped of certain key components. The conversion assembly comprises a frame on which vacuum interrupters, their operating mechanism, and an interconnecting linkage are mounted and suitably adjusted in the factory. Conversion is effected by attaching this frame to the top of an existing cell of the circuit breaker in place of the previously-used cap and thereafter electrically connecting the vacuum interrupters in circuit with existing lead-in conductors.

3,751,618

PUSH-SWITCH WITH SPRING BIASED PLUNGER

Don M. Hallerberg, Huntington Beach, Calif., assignor to Hi-Tek Corporation, Santa Ana, Calif.

Filed Feb. 23, 1972, Ser. No. 228,648
Int. Cl. H01h *3/12*
U.S. Cl. 200—159 R **1 Claim**

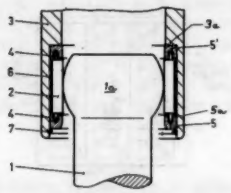


A highly electrical Electrical switch suitable for keyboards and the like. A pair of resilient contact members are mounted within a housing such that a plurality of contact portions on one of the members are biased to normally contact corresponding portions on the other member. The contact portions are formed from a suitable contact material. When the switch unactuated, a contact separating member on a switch actuating plunger forces apart the corresponding contact portions on the contact members. When the plunger is moved against a spring to an actuated position, the contact separating member moves to allow the corresponding contact portions to come into electrical contact.

3,751,619
ELECTRICAL CONTACT STRUCTURE OF THE PLUG-AND-SOCKET TYPE CIRCUIT BREAKERS

Adolf Niederer, Unterehrendingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Boden, Switzerland

Filed June 20, 1972, Ser. No. 264,512
Claims priority, application Switzerland, July 1, 1971, 9660/71
Int. Cl. H01h *1/38*
U.S. Cl. 200—166 BH 2 Claims

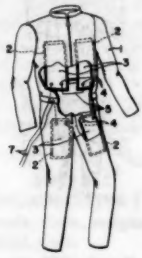


A plug-and-socket type of electrical contact structure designed for handling high currents includes a contact plug having a spherically shaped head adapted to enter a tulip type of socket formed by a cylindric assembly of resiliently mounted contact fingers which are forced in a radially outward direction by the head of the contact plug to establish a pressure contact with a cylindric support housing within which the cylindric assembly of contact fingers is mounted.

3,751,620
ELECTRIC GARMENT

Teruhisa Yuasa, Takatsuki, Japan, assignor to Yuasa Battery Company Limited, Osaka Prefecture, Japan

Continuation of Ser. No. 99,833, Dec. 21, 1970, abandoned.
This application Dec. 30, 1971, Ser. No. 214,498
Claims priority, application Japan, Mar. 10, 1970, 45/23337
Int. Cl. H05b *1/00*
U.S. Cl. 219—211 3 Claims

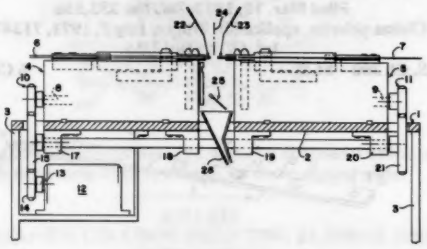


An electric garment having heating elements on the inside surface of the garment, the heating elements connecting to a power source outside the garment through a cord so as to generate heat from the elements. The heating elements comprise an electroconductive fabric knitted of a chemical fiber and a metallic fiber coated on the surface of the fabric with an electroconductive agent prepared from a mixture of thermosetting resin, carbon powder and metal powder, the heating element being further covered with a spongelike heat retaining layer having independent bubbles.

3,751,621
TRANSFER UNIT FOR AN AUTOMATIC MACHINE FOR THE LARGE-SCALE PRODUCTION OF PARTS COMPRISING TWO WELDED ELEMENTS

Rene Maier, 11, rue d'Huminge, 67 Strasbourg-Neudorf, France

Filed Mar. 30, 1972, Ser. No. 239,447
Int. Cl. B23k *9/04, 11/00*
U.S. Cl. 219—103 8 Claims



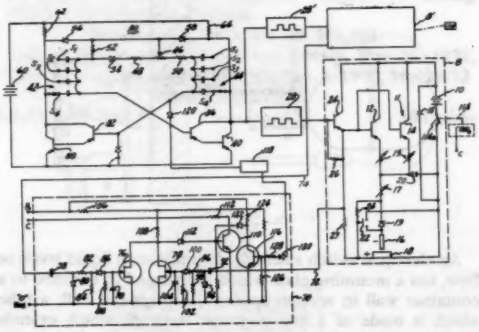
A transfer unit for feeding a continuous line of wire, cutting the wire into segments and welding them to a second element such as a second wire segment which is processed in an identical manner in a second unit mounted opposite to the first.

The unit comprises a horizontal drive shaft mounted in a stationary frame, a coaxial cylinder sleeve secured to the shaft and provided with a plurality of guide grooves forming cams, two independent carriages fitted with roller followers engaged in the guide grooves and displaceable on two superposed parallel slides in reciprocating movements programmed by the grooves, two clamps mounted on the carriage for gripping and feeding the wire in continuous motion, means for cutting the wire into segments and connecting each segment to a voltage source which delivers a welding pulse.

3,751,622
PROTECTION CIRCUIT FOR ELECTRICAL DISCHARGE MACHINING POWER SUPPLY APPARATUS

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., Davidson, N.C.

Filed Jan. 17, 1972, Ser. No. 218,271
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 S 10 Claims



A protection circuit which responds to output transistor failure to provide power interruption to protect an electrical discharge machining apparatus. The parameter responded to is that drive voltage which is used to trigger the electronic output switch on and off. The protection circuit is equally applicable to single or to multiple gap machining set-ups. Field effect transistors providing high impedance operation are used to initiate interruption of the power supply for the electrical discharge machining apparatus.

3,751,623

PROCESS AND DEVICE FOR PRODUCING THIN WALLED OR EXTRA-THIN WALLED SMOOTH TUBES BY WELDING

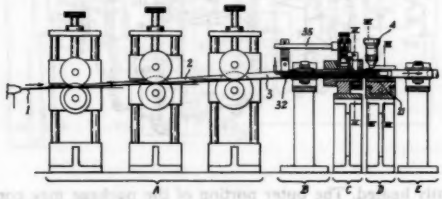
Fernand Noel Doublet, La Croix St. Leu, France, assignor to Societe Anonyme Tubest, Paris, France

Filed June 9, 1971, Ser. No. 151,317

Claims priority, application France, June 12, 1970, 7021596

Int. Cl. B23k *31/06*

U.S. Cl. 219—67 13 Claims



A process and apparatus for thin-walled tubes from strips having a thickness of 0.03 – 0.7 mm, for example, wherein the tube blank formed by curving the strip is continuously moved past a stationary electrode to weld the same.

3,751,624

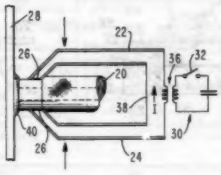
BUTT BRAZING APPARATUS AND METHOD

Raymond H. Banks, Wappingers Falls; Neal D. Gillespie, and Adolph W. Rzant, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, New York, N.Y.

Filed June 29, 1972, Ser. No. 267,279

Int. Cl. B23k *1/04*

U.S. Cl. 219—85 7 Claims



A metallic bonding system for butt-brazing miniature wires is provided which utilizes a small composite wire which includes a section of brazing material. The fine wire is to be butt-brazed to a pad member to form an electrical connection. A first conductive member forms a first electrode and a second conductive member forms a second electrode. Each of these electrodes contains a wire holding section for holding the small composite wire near one end thereof. A power supply is connected at one end of each of the first and second conductive members and a high resistance member is connected across the other end thereof. The power supply provides a controlled current pulse of sufficient duration to cause heating in the wire holding section to melt the insulation and contact the small composite wires, thereby completing a circuit through the small composite wires which heats up sufficiently to cause the brazing material section of the wire to form a braze between the end of the wire and the pad member.

3,751,625

UNDERWATER TORCH

Jerry R. Hummel, and Kenneth E. McCall, both of Lancaster, Ohio, assignors to Arcair Company, Lancaster, Ohio

Filed Mar. 1, 1972, Ser. No. 230,609

Int. Cl. B23k *9/28*

U.S. Cl. 219—70 4 Claims

An underwater cutting and welding torch wherein in one embodiment the electrode is securely gripped by movable members held together by an elastic cover. The torch is further characterized in that a minimum of electrical conducting material is required resulting in a safer torch. An alternate apparatus for securing the electrode includes an elastic or elastomeric member that itself is one of the electrode gripping members.

3,751,626

RESISTANCE WELDING OF ALUMINUM

Wayne W. Binger, New Kensington; Walter G. Zelley, Lower Burrell; Fred R. Hoch, Lower Burrell, and Paul B. Dickerson, Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 17, 1971, Ser. No. 209,396

Int. Cl. B23k *11/16*

U.S. Cl. 219—118 9 Claims

Resistance welding such as spot welding of aluminum sheets and the like is greatly enhanced by the provision of a reacted silicate coating which substantially extends the useful life of welding electrodes by reducing pickup of aluminum on the electrode.

3,751,627

APPARATUS FOR INITIATING AND STABILIZING A WELDING ARC

Guido Prischi, Antony, France, assignor to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 28, 1971, Ser. No. 212,939

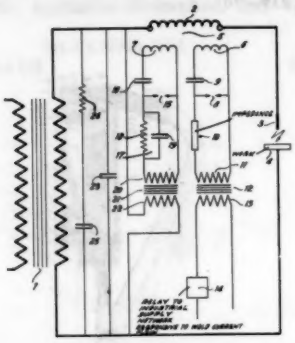
Claims priority, application France, Dec. 30, 1970, 7047290

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R 3 Claims

This invention relates to welding installations, of the kind that comprise a source of electrical energy at mains frequency, incorporating a supply circuit for a welding electrode and means for forming and emitting high frequency discharges into the supply circuit to the electrode. The pulse-forming means are of the kind incorporating a capacitor and a discharge path such as an arrester, spark gap or other discharger. According to the invention, the pulse-forming

means comprise a first circuit including a capacitor and a discharge path, such that the strength of the pulses is sufficient to cause initial striking of the welding arc and being rendered inoperable when an arc welding current has been established and a second pulse-forming circuit also including a capacitor and a discharge path all independent of said first circuit. Said



second circuit is supplied at arc voltage and is rendered operable during rapid variation of the arc voltage, the pulses emitted having a strength sufficient to maintain the stability of the arc struck by the first circuit. The pulses or discharges from the first and second circuits are transferred to the arc via a common winding.

3,751,628

METHOD FOR ARC WELDING WITH OVERLAPPED BAND ELECTRODES

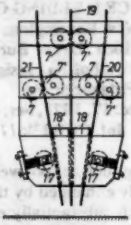
Peter Scherl, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. AG, Kapfenberg, Austria

Filed Dec. 22, 1970, Ser. No. 100,749

Claims priority, application Austria, Dec. 24, 1969, 12047

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **12 Claims**



An improved arc-welding process and apparatus for producing welded seams by means of band or flat strip electrodes. The apparatus of the invention uses at least two band or flat strip electrodes which overlap at least partially. The aforementioned flat strip electrodes are then welded by means of arc-welding in a common welding bath.

3,751,629

SURFACE HEATING DEVICE

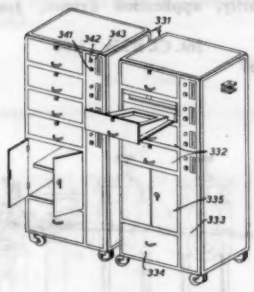
Paul Eisler, 57 Exeter Rd., London, England

Division of Ser. No. 607,601, Dec. 30, 1966, Pat. No. 3,573,430, which is a continuation-in-part of Ser. No. 301,488, Aug. 12, 1963, Pat. No. 3,296,415, which is a continuation-in-part of Ser. No. 749,554, July 18, 1958, Pat. No. 3,100,711. This application Mar. 9, 1971, Ser. No. 122,495

Int. Cl. H05b *3/06*

U.S. Cl. 219—201 **8 Claims**

A dispensible container constructed for a single use incorporates a thin low voltage heating film with terminals accessible from outside and opening means permitting access to its contents is used as a package for a substance adapted to be heated and plastic in the sense of being sufficiently mobile to be removed from the container as soon as it has been suffi-



ciently heated. The outer portion of the package may comprise means for directing most of the heat inside the package to heat the substance and its side walls may be stiffened by a stiff frame of light weight material of the stressed skin type.

3,751,630

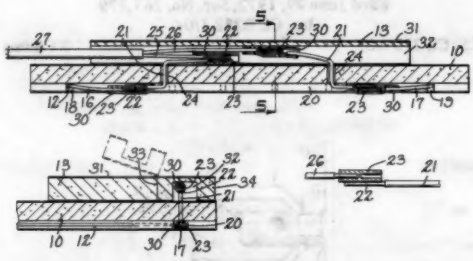
RADIANT PANEL HEATING SYSTEM

Joseph L. Brasky, Killingworth, Conn., assignor to Therma-Ray, Inc., Killingworth, Conn.

Filed Oct. 12, 1971, Ser. No. 188,388

Int. Cl. H05b *1/00*; H02g *3/00*

U.S. Cl. 219—345 **3 Claims**



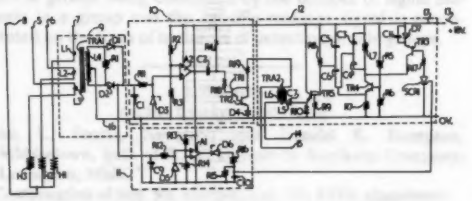
An electric radiant heating panel includes a gypsum panel incorporating a length of electrical resistance heating wire therein having ends adapted to be connected to source leads at the rear surface of the panel by connection members. Each connection member comprises a short length of wire attached at one end to the heating wire and carrying a sleeve-like member on the other end adapted to receive source leads from two directions whereby a plurality of such panels can be connected electrically in parallel with the source leads. A cover is provided over the connection members at the rear of the panel and comprises a section of gypsum panel scored through one cover sheet and the gypsum core so that the section is divided into two portions whereby the other cover sheet acts as a hinge. One portion is secured to the rear surface of the panel, while the other portion is recessed to receive the connection members and source leads and is pivotally movable about the hinge relative to the rear surface of the panel to selectively cover or expose the source leads and connection members.

3,751,631

TEMPERATURE CONTROL SYSTEMS

Brent H. A. Seager, Stoney Stanton, and Geoffrey A. Williams, Ernsford Grange, both of England, assignors to Dunlop Limited, London, England

Filed Feb. 14, 1972, Ser. No. 225,956
Claims priority, application Great Britain, Feb. 17, 1971, 4,794/71
Int. Cl. H05b 1/02
U.S. Cl. 219—485 15 Claims



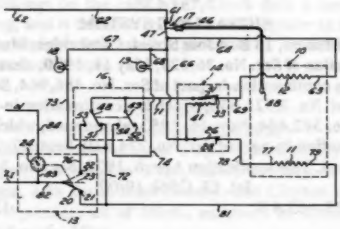
A heater control system, particularly for temperature unbalance arising in the currents flowing in three heater elements supplied from a three-phase power supply. The current unbalance may be created as a result of a short-circuit, or may in a temperature control circuit be dependent on changes in the resistance of one heater element having a different temperature coefficient from that of the other elements.

3,751,632

OVEN AND CONTROL CIRCUIT THEREFOR

Herbert A. Kauranen, Grandville, Mich., assignor to Kelvinator, Inc., Grand Rapids, Mich.

Filed Oct. 18, 1971, Ser. No. 189,903
Int. Cl. H05b 1/02
U.S. Cl. 219—492 13 Claims



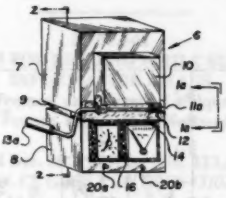
An oven and control circuit is disclosed in which four different modes of operation are provided. In one mode of baking, both the broil heating element and the bake heating element are operated on demand of the oven thermostat. The broil heating element is operated on a timed on-off cycle to provide top heat for browning or the like. In a second bake mode of operation, top heat is not provided but the control circuit is operated automatically to change to a keep-warm mode of operation at the end of the baking time. In the keep-warm mode, the broil heating element is provided with full voltage but is operated with a timed on-off cycle of relatively short duration with the cycle time arranged to establish a heat balanced condition when the desired keep-warm temperature is reached so that low temperature thermostat means are not required. In the broil mode of operation, the broil heating element can be operated with a timed on-off cycle which can be adjusted to regulate broiling heat.

3,751,633

PLUG-IN CHAMBER FURNACE

William Green, 128 Ocean View Ave., and Itzhak Heisler, 2632 W. 2nd St., both of Brooklyn, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,679
Int. Cl. F27b 5/14
U.S. Cl. 219—390 2 Claims



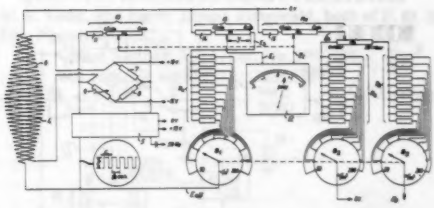
A burn-out furnace having separate upper and lower units with the upper unit being detachably mountable on the lower unit, one of said upper and lower units being the element-containing ceramic furnace and the other of the units being the electronic control therefor with the circuits of the two separate units being connectable by a plug-in male and female jack unit, the male jack being associated with one unit and the female jack being associated with the other unit, additionally in a preferred embodiment the furnace door being pivotably mounted on a support extending from the electronic control unit and the door being openable and closable by a handle detachably connected to the door and mountable in opposite alternative directions for a left-handed operator as opposed to a right-handed operator.

3,751,634

APPARATUS FOR MEASURING THE DEGREE OF THERMAL DISCOMFORT AND A SYSTEM COMPRISING SUCH AN APPARATUS

Thomas Lund Madsen, No. 11 Rosengaardsvej, 2830 Virum, Denmark

Filed Nov. 15, 1971, Ser. No. 198,524
Int. Cl. H05b 1/02
U.S. Cl. 219—497 14 Claims

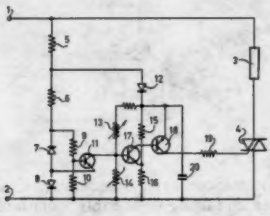


An apparatus for measuring the degree of thermal discomfort by means of a measuring body for simulating the heat exchange of the human body with the environment. The temperature of the measuring body is maintained at a constant value near the temperature of the human body and the power supplied to the measuring body is measured. From this measured value a first comparison magnitude is derived, taking into consideration a fictitious total heat production and/or type of clothing set on the apparatus. A second comparison magnitude also depending on the fictitious heat production and/or type of clothing set on the apparatus, but not on the power supplied to the measuring body is also produced. The two comparison magnitudes are compared and the comparison result is the output magnitude of the apparatus which can be displayed or used in any other way.

3,751,635
TEMPERATURE CONTROL CIRCUIT

Wolfgang Niehaus, Sandheide 15, 2104 Hamburg 92, Germany

Filed Feb. 22, 1972, Ser. No. 228,132
Claims priority, application Germany, Feb. 20, 1971, P 21 08 218.8
Int. Cl. H05b 1/02
U.S. Cl. 219—499 8 Claims

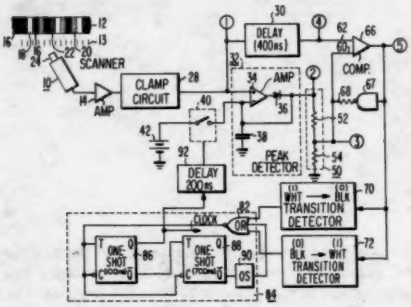


The invention relates to a temperature control circuit for a device, such as an oven, a cooker or a washing machine, including a triac which is controlled by a temperature sensor connected in a bridge circuit, a second bridge circuit and an amplifier stage being provided by means of which three-stage control is obtained and the triac is always controlled during the passages through zero of the supply voltage. When the temperature is too high no power is supplied to a heating element, when the temperature is too low the full power is supplied, and near the desired temperature one half of the power is supplied.

3,751,636
SIGNAL TRANSITION DETECTION CIRCUIT

Herbert George Coles, Jr., West Upton, Mass., assignor to RCA Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,633
Int. Cl. G06k 7/10; E04g 17/00
U.S. Cl. 235—61.11 E 21 Claims

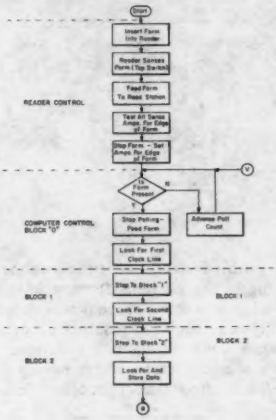


A circuit for detecting transitions in an alternating signal representing binary information which signal may lack uniform peaks and sharp transitions. The signal is impressed simultaneously on a delay line and at least a peak detection circuit for detecting peaks in one sense. The delayed signal and a given fraction of the signal from the peak detection circuit are impressed on a comparator circuit, the output of which is indicative of the binary value of the alternating signal at any given time.

3,751,637
DIGITAL COMPUTER AND FORM READER FOR INVENTORY CONTROL AND RECORDING CASH TRANSACTIONS

Neil J. Dillon, Los Angeles, and Boris R. Sincich, Torrance, both of Calif., assignors to TRW Data Systems, Inc., Torrance, Calif.

Division of Ser. No. 105,497, Jan. 17, 1971. This application May 25, 1972, Ser. No. 257,059
Int. Cl. G06k 1/12
U.S. Cl. 235—61.9 A 2 Claims

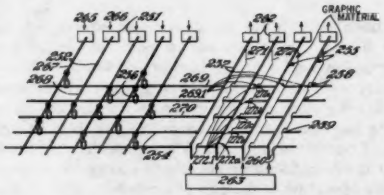


A digital computer employing hard wired control logic and a rotating memory drum system for inventory control, price changes and cash transactions. If desired, a novel form reader may be employed in conjunction with the computer to sense transactions and, in conjunction with the form itself, to actuate the computer at appropriate times. The computer and form reader are particularly suited for use in eating establishments where transaction speed is required.

3,751,638
SIGNALLING SYSTEM

Calvin N. Mooers, 13 Bowdoin Street, Cambridge, Mass.

Continuation of Ser. No. 36,220, May 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 486,964, Sept. 13, 1965, Pat. No. 3,521,034, which is a continuation-in-part of Ser. No. 392,444, Nov. 16, 1953, abandoned, which is a continuation-in-part of Ser. No. 774,620, Sept. 17, 1947, abandoned. This application Apr. 6, 1972, Ser. No. 241,839
Int. Cl. G06k 19/00
U.S. Cl. 235—61.6 R 13 Claims



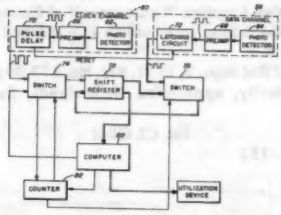
The method and apparatus of a signalling system wherein the message output signal is reconstituted from instances of recognition of preassigned groups of signal elements present in the transmission medium, are described. The transmission medium contains a plurality of messages each coded by groups composed of a plurality of discrete transmission signal elements, with the signal elements for different messages being of

comparable energy intensity, with the transmission signal elements of the groups being distributed over the transmission parameter domain, and with the possibility of signal elements of some groups corresponding to signal elements of other groups or messages. For reception, a physical representation is formed for each transmission signal element in the transmission medium according to parameter intervals in a domain of a specified set of transmission parameters. To receive a specific message, instances of the presence of preassigned groups of such physical representations are detected where detection of a group is determined by the presence of a specified minimum number of representations, the occurrence of spurious detections of groups being controlled by the number of signal elements in a group and the specific message signal is reconstituted on the basis of instances of detection of said groups.

3,751,639
CARD READER SYSTEM

John L. Searle, Newport, and Donald B. Hampton, Middletown, both of R.I., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 68,088, Aug. 31, 1970, abandoned.
This application June 8, 1972, Ser. No. 261,123
Int. Cl. G06r 7/10
U.S. Cl. 235—61.11 E **5 Claims**

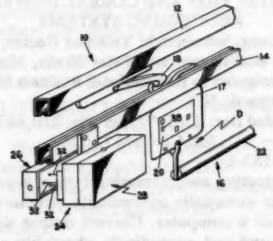


A card reader system in which a combination of data indicia, and clocking and timing indicia are present simultaneously on a coded card, for example, an identity card or boarding pass, which is insertable into the card reader. As a card is inserted, clock pulses are generated in accordance with the clock markings on the card which clock data is sensed from the coding, and is transferred into a shift register at a variable clock rate and from the shift register into a central computer at a different clock rate.

3,751,640
CODE READING SYSTEM

Jack R. Daigle, Grand Rapids Twp., Kent County; James D. Habegger, Thornapple Twp., Barry County; Howard A. Zollinger, Ada Twp., Kent County, and Clayton H. Vander Meer, Wyoming, all of Mich., assignors to Rapistan, Inc., Grand Rapids, Mich.

Filed Feb. 14, 1972, Ser. No. 225,824
Int. Cl. G02b 5/12; G06k 7/10
U.S. Cl. 235—61.11 E **17 Claims**

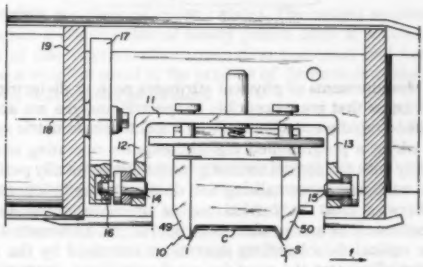


A logic card is moveable along a conveyor with a carrier or article through a reading station having a plurality of arrangeable light sources on one side and a like plurality of arrangeable light sensors on the other side. The logic card includes moveable blocks in one or more elongated slots which are arrangeable to define one or more patterns of openings permitting the light sources and sensors to communicate under certain conditions to initiate a conveyor dispatch function. The logic card includes a stationary opening which functions to key or arm the reading station to take a reading only when the card is in proper position.

3,751,641
APPARATUS FOR READING WHILE SUPPORTING INFORMATION MEANS

Pierre Durand, Fresnes, and Gerard Lartique, Fontenay-aux-Roses, both of France, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Dec. 29, 1971, Ser. No. 213,656
Int. Cl. G06k 7/04; H01h 43/08
U.S. Cl. 235—66.11 C **12 Claims**

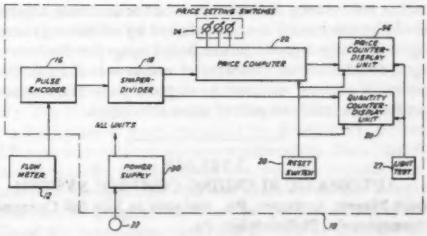


The present invention relates to a novel apparatus for the facile reading of information on an information carrying means such as perforated card and the like.

3,751,642
QUANTITY AND PRICE COMPUTER SYSTEM

David A. Todd, and Barry Joseph Fitzgerald, both of P. O. Box 2546, Norman, Okla.

Filed Nov. 17, 1971, Ser. No. 199,686
Int. Cl. G06f 7/38; G01f 3/00
U.S. Cl. 235—151.34 **7 Claims**

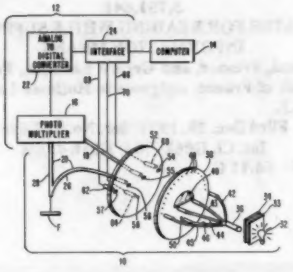


An electronic computer system for use with any conventional material dispensing apparatus which utilizes a flowmeter having a rotating shaft output or pulse output. The computer system comprises pulse encoder means operably connected to the existing flowmeter, a programmable price computer with associated total price display unit, a total quantity display unit and a pulse shaper/divider for interfacing said encoder with the price computer and the quantity display unit.

3,751,643
SYSTEM FOR PERFORMING SPECTRAL ANALYSES UNDER COMPUTER CONTROL

Frederick H. Dill, and Karl L. Konnerth, Jr., both of Putnam Valley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1972, Ser. No. 256,030
Int. Cl. G01b 11/06, 9/02, 19/08
U.S. Cl. 235—151.32 **15 Claims**



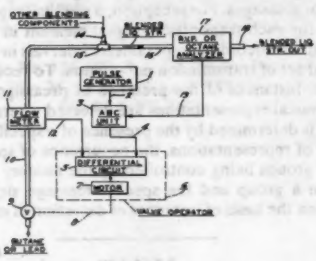
Measurements of physical attributes such as dielectric film thickness that are susceptible to spectral analysis are accomplished rapidly and accurately by a spectrophotometric system in which a programmed digital computer operating concurrently with the optical scanning means automatically performs the calibrating, normalizing and data reducing functions that otherwise must be carried out as time-consuming human, mechanical or analog electronic operations. The control over the optical data handling operations exercised by the computer eliminates the need for mechanically or electronically adjusting the optical apparatus to meet changing system conditions, whether periodic or aperiodic. Source light is transmitted through a rotating variable-wavelength interference filter which acts during one-half of its cycle to transmit light of varying wavelength through a fiber-optic reference path directly to the optical data acquisition apparatus, while acting in the next half-cycle to transmit light of such varying wavelength indirectly to said data acquisition apparatus through a measurement path. In the present example, where film thickness is the attribute being measured, the measurement path comprises a bifurcated fiber-optic bundle, one branch of which is used to carry the light of variable wavelength to the sample, and the other branch of which carries light reflected from the sample to the aforesaid data acquisition apparatus. A computer program enables light passed through the reference path in one half-cyle to calibrate the system for measuring optical transmission or reflectance in the next half-cycle. Reduction of relative reflectance data to absolute reflectance data (needed for the accurate determination of film thickness) is accomplished by additional computer programs whose algorithms are based upon the discovery that all graphs of absolute reflectance versus wavelength for film samples of a given material having different thicknesses are bounded by a common pair of wave envelopes.

3,751,644
AUTOMATIC BLENDING CONTROL SYSTEM

Robert Mayer, Ardmore, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Feb. 22, 1972, Ser. No. 227,749
Int. Cl. G05d 11/02; G06g 7/57
U.S. Cl. 235—151.12 **8 Claims**

A system for automatically adjusting the percentage or quantity of a given stream (which is being blended with other streams to form a blended product such as gasoline) in accordance with variations in the output of an analyzer associated with that stream. The analyzer measures a particular property of the blended stream. Alarms are activated when the stream or component percentage reaches certain

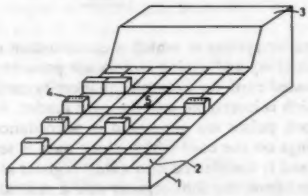


predetermined limits during its automatic adjustment, and the component percentage adjustment is inhibited from going beyond these limits.

3,751,645
METHOD OF AND DEVICE FOR THE DIGITAL SIMULATION OF DIGITAL COMPUTER CONFIGURATIONS

Johan Rudolf Brandsma; Jacob Fredrik Klinkhamer, and Benny Louisa Angelina Waumans, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,391
Claims priority, application Netherlands, Sept. 3, 1970, 7013032
Int. Cl. G06f
U.S. Cl. 235—152 **2 Claims**



A method of, and device for, the digital simulation of digital computer configurations, in which the various computer modules of a computer configuration to be simulated, are replaced by hardware digital simulation modules which can be placed on a panel, and which are connected in accordance with the configuration. During the simulation, the actual speeds of the simulated computer modules are represented by adjustable clock pulse signals which are applied to the simulation modules. Display modules signal the conditions occurring in and on the outputs of the simulation modules.

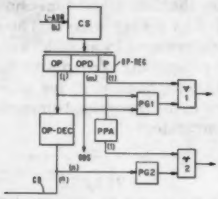
3,751,646
ERROR DETECTION AND CORRECTION FOR DATA PROCESSING SYSTEMS

Hellmuth R. Geng, Schoenaich; Volkmar Goetze; Johann Hajdu, both of Boeblingen, and Petar Skuin, Magstadt, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,863
Int. Cl. G06f 11/10
U.S. Cl. 235—153 A **8 Claims**

An error detecting and correcting system is provided for a unit having an essentially subordinate structure, such as a function unit of a computer. Correct output signals are assumed for the unit and, accordingly, check bits are formed as a function of the output signals of the unit. These bits are

stored with a control word associated with each operation. As the operation is being executed, the check bits are regenerated from the output signals of the function unit and



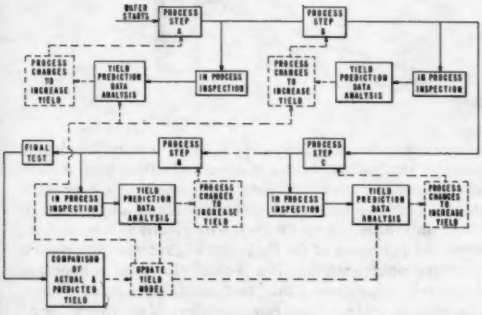
are subsequently compared with the correct check bits previously stored. Non-concurrence of the check bits indicates that an error may have occurred in the unit.

3,751,647

SEMICONDUCTOR AND INTEGRATED CIRCUIT DEVICE YIELD MODELING

Roger A. Maeder, Jericho; Frederick W. Oster, Charlotte, and Richard J. Soderman, Essex Center, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1971, Ser. No. 182,778
Int. Cl. G03c *5/04*
U.S. Cl. 235—151.11 **8 Claims**



Yield modeling for an integrated circuit manufacturing process utilizes the number of defects for each chip, rather than average defect density, in the prediction model. An overall predicted yield is obtained from individual yields calculated for regions of approximately homogenous yield within the region. By using this approach, and preferably utilizing actual yield data and defect information from previously produced devices as well, in generating the yield model, sufficiently accurate yield predictions are obtained to allow the predictions to be used to identify critical yield detracting operations in the manufacturing process. These critical detracting operations may then be changed to decrease the number of defects produced by them.

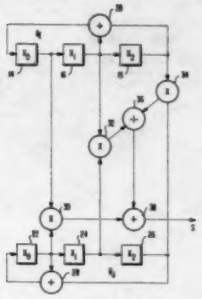
3,751,648

GENERALIZED SHIFT REGISTER PULSE SEQUENCE GENERATOR

William W. Wu, Olney, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 1, 1971, Ser. No. 203,702
Int. Cl. G06f *1/02*
U.S. Cl. 235—152 **5 Claims**

A generalized pulse sequence generator comprises a plurality of shift register generators, each providing a pulse sequence output. In order to produce one pulse in the sequence the states of the corresponding stages of each shift register generator are modulo-2 multiplied and the resultant outputs from the final multiplier are summed. The shift register generators are clocked at different rates to cause certain ones to run through



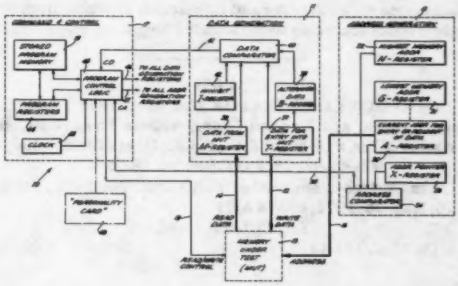
a complete sequence of register states. The output sequence comprises a combination of binary pulses, each of which is a result of one multiplication/summation operation and has a period n which is equal to the product of the periods of the individual shift register generators.

3,751,649

MEMORY SYSTEM EXERCISER

Thomas William Hart, Jr., Phoenix, Ariz., assignor to Macrodata Company, Chatsworth, Calif.

Filed May 17, 1971, Ser. No. 143,784
Int. Cl. G11c *29/00*; G06f *11/04*
U.S. Cl. 235—153 AC **43 Claims**

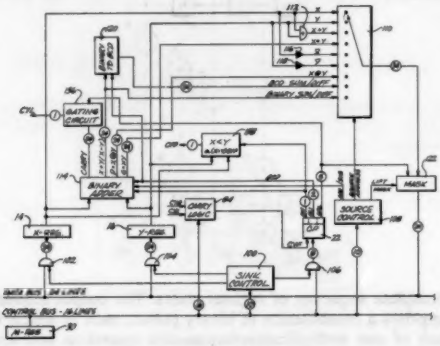


Memory systems are tested using an exerciser in which stored program instructions direct data generation, memory addressing, read/write operation and data or address comparison. For data generation, a test word register (the T-register) contains a word to be written into the memory under test at an address stored in an address register (the A-register). The T-register contents can be modified, interchanged with a background word register (the B-register), shifted or used for pseudo-random sequence generation. Data read from the memory under test is placed in a memory register (the M-register) for comparison with the contents of the T-register. Certain stored program instructions are conditioned by the results of this data comparison. The A-register contents can be modified, stored in a pointer register (the X-register), or compared with the pointer address or with another address indicative of the memory size. Other program instructions are conditioned by the results of such address comparison. Typical memory test programs, including "galloping" and "walking" data routines and random sequence routines, illustrate operation of the memory system exerciser. The exerciser can be used independently or as a component in a larger test system.

3,751,650
VARIABLE LENGTH ARITHMETIC UNIT

William A. Koehn, Santa Barbara, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 28, 1971, Ser. No. 157,091
Int. Cl. G06f 7/385
U.S. Cl. 235—175 5 Claims

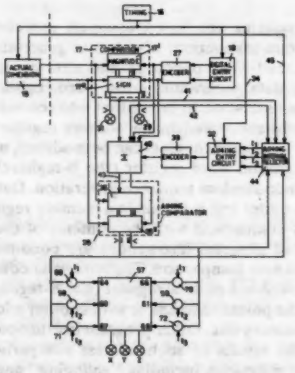


An arithmetic unit in which a plurality of arithmetic and logic functions are performed using either one or both of two inputs X and Y, each input providing a variable number of bits in parallel. The output may be any one of a number of functions, such as the arithmetic functions of $X + Y$ and $X - Y$, and the logical functions $X \cdot Y$, $X + Y$, $X \oplus Y$, $\overline{X}$, and $\overline{Y}$, etc. All of the functions are generated by the unit and any of the functions may be selected and operate as a data source. The arithmetic unit can operate either in a straight binary or a binary-coded decimal mode. The number of bits in the output for the arithmetic functions is variable and the carry or borrow is generated for each order and is therefore available from the highest order according to the selected length.

3,751,651
DIMENSION COMPARATOR FOR MACHINE TOOLS

Piero Pomella, and Luciano Lauro, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy

Filed Sept. 29, 1971, Ser. No. 184,678
Claims priority, application Italy, Sept. 30, 1970, 70263 A/70; Aug. 26, 1971, 69844 A/71
Int. Cl. G06f 15/46
U.S. Cl. 235—151.11 17 Claims



A dimension comparator for machine tools is disclosed wherein a first comparator compares a theoretical numerical dimension with an actual dimension as determined by a position measurer. After it is determined that the actual dimension is greater or less than the theoretical dimension, a second comparator compares the actual dimension to a numerical value representing the theoretical dimension plus or minus the numerical value of an aiming interval. This representative numerical value is determined by an adder controlled by the output of the first comparator. In an alternative embodiment, means are provided for controlling the adder to add predetermined increments to the theoretical dimension for comparison in the second comparator.

3,751,652
UNIVERSAL CAMERA FLASH SENSOR BRACKET

Dean M. Peterson, Littleton, and Peter H. Neukirchner, Lakewood, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 28, 1971, Ser. No. 166,860
Int. Cl. G03 15/02
U.S. Cl. 240—1.3 2 Claims

A mounting bracket featuring a light sensing device is detachably securable to both a camera and a flash unit. A flash control signal is transmitted from the camera to the bracket through a first two wire electrical connection, and thence to the flash unit through a second two wire electrical connection, to effect the operation of the flash unit whereby to illuminate a scene being photographed. The second electrical connection is selectively extendable from, and ordinarily housed within, the bracket. A second signal representative of the operation of the flash unit is transmitted from the flash unit through the second electrical connection to a light sensing circuit, included within one embodiment of the mounting bracket, to activate a light sensing device which, in turn, monitors light received from the scene being photographed and generates a quench signal upon detection of a predetermined amount of the received light. The quench signal is transmitted to the flash unit through the second electrical connection for effectively terminating the illumination of the scene being photographed.

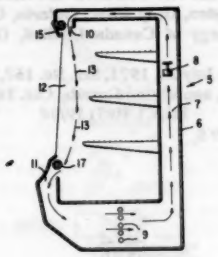
3,751,653
REFRIGERATED DISPLAY CASE

James Henry, Levittown, Pa., assignor to Emhart Corporation, Bloomfield, Conn.

Filed June 4, 1971, Ser. No. 149,922
Int. Cl. A47f 11/10
U.S. Cl. 240—6 10 Claims

A refrigerated case and display lamp arrangement is provided which case may be alternately cooled and heated for defrosting purposes. An elongated tubular fluorescent lamp is mounted within the case and is provided with tubular jacket spaced coaxially thereabout. Elastomeric support members are disposed at either end of the lamp to hold the jacket in a

particular spaced relationship with respect to the lamp. Axially extending grooves are formed in a radial face of each support member to receive the terminal edges of the tubular jacket. The outer surface of each supporting member is formed with a circumferentially extending recess for receiving a steel ring which biases axially extending surfaces of each



supporting member into pressure engagement with both the tubular jacket and a glass portion of the fluorescent lamp.

A spacer member may be positioned about the fluorescent lamp approximately at the mid-span thereof for insuring a constant spaced relationship between the jacket and the lamp along the entire length thereof.

3,751,654

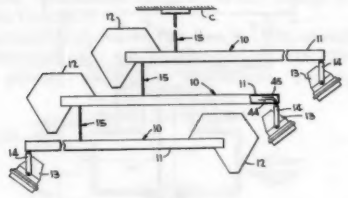
ROTATIONAL LIGHTING SYSTEM

Paul D. Grebinar, 10 Station Square, Forest Hills, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,738

Int. Cl. F21v *21/03*; F21p *5/00*

U.S. Cl. 240—52 R **12 Claims**



A rotational lighting system comprising at least one lighting fixture suspended so as to be freely rotatable between its ends from a horizontal support. A means for suspending the lighting fixture comprises rigid electric current-conducting elements having a support means at one end so designed as to not only support the fixture but to conduct electric current therethrough from said elements to a light on the fixture. Additional lighting fixtures and/or dummy fixtures similarly suspended in series with one another but out of axial alignment may also be provided so that the lights of each fixture will each generate light beams along different and random paths as each fixture freely rotates about its own suspension means.

3,751,655

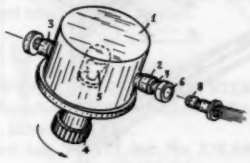
DIFFUSER WITH ONE OR MORE ATTACHMENT MEMBERS FOR LIGHT GUIDING CABLES AND PROVIDED WITH A LIGHT ATTENUATING DEVICE

Giuseppe Codrino, Via Stazione, Quattordio, Alessandria, Italy

Filed Nov. 12, 1971, Ser. No. 198,338

Int. Cl. B60q *3/04*

U.S. Cl. 240—8.16 **4 Claims**



A diffuser with one or more attachment members for light guiding cables, and provided with a device permitting to attenuate the quantity of light emitted by the luminous source.

3,751,656

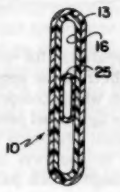
FLEXIBLE PLASTIC FLASH ILLUMINATION DEVICES WITH SOLID PYROTECHNIC MATERIAL

Sheldon A. Buckler, Lincoln; David P. Kennedy, Cambridge, and Kenneth S. Norland, Belmont, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 10, 1972, Ser. No. 216,467

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **18 Claims**



Flash illumination devices are formed of transparent sheet plastic wherein a pair of opposed walls are marginally secured together to provide a cavity for retaining pyro-technic material. The pyrotechnic material comprises a combustible material and a solid oxidant. Ignition means are associated with the flash devices.

3,751,657

LIGHTING FIXTURE FOR HIGH INTENSITY LAMPS

Richard Sangiamo, Roselle; Charles Roth, Glen Gardner; Edward J. Fox, Dover, and Leonard Atkin, Springfield, all of N.J., assignors to Keene Corporation, New York, N.Y.

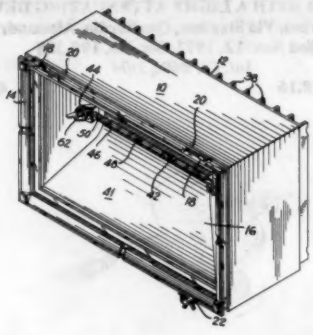
Filed Dec. 16, 1970, Ser. No. 98,806

Int. Cl. F21v *29/00*, *7/06*

U.S. Cl. 240—41.35 E **8 Claims**

A lighting fixture of the floodlight type using a quartz iodine lamp having sealed terminals on opposite ends thereof. The metal sockets into which the lamp terminals fit are designed to carry away heat from the sealed ends by radiation and conduction at a rate sufficient to permit lamp operation below

prescribed temperature levels set by the lamp manufacturer. The fixture further incorporates improved reflector mounting,



lamp accessibility, socket and heat dissipation features which permit economical manufacture, speedy assembly, operation and maintenance.

3,751,658

ILLUMINATING APPARATUS FOR STRAIGHT LINE PROPAGATION OF LIGHT

Claude D. Arnold, Box 749, Alpine, Tex.

Filed July 14, 1971, Ser. No. 162,450
Int. Cl. F21v *11/04*
U.S. Cl. 240—46.07 **4 Claims**

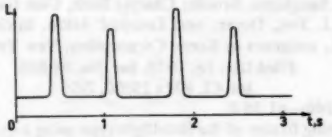
An illuminating apparatus for projecting and directing straight line rays of light from the apparatus to a selected area spaced apart therefrom which comprises a light source and a filter through which the light must pass. The filter is comprised of a plurality of individual adjacently arranged cells which are disposed transversely to the rays of light, each of which establish a tunnel through which part of the light can pass. Each cell, in longitudinal cross-sectional configuration, diminishes in size in a direction away from the light source so that stray light waves are eliminated.

3,751,659

LIGHTING SYSTEM FOR VEHICLES

Birger Nordberg, 5 Lovstaplatsen, Vasteras, Sweden

Continuation of Ser. No. 711,059, March 6, 1968, abandoned. This application Aug. 17, 1970, Ser. No. 64,601
Claims priority, application Sweden, Mar. 8, 1967, 3157/67
Int. Cl. B60q *1/00*
U.S. Cl. 240—7.1 **8 Claims**



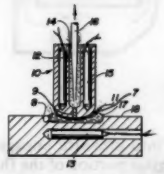
A lighting system for vehicles in which individual units are provided for illuminating limited portions of the field of vision in front of the vehicle in the direction of travel which is primarily intended for motor vehicles and is such as to illuminate the road and any moving or stationary obstacles in front of the vehicle, thereby utilizing the driver's eyesight so that it is given the optimum conditions possible under which to function whereby accidents may be prevented.

3,751,660

SAMPLE VAPORIZING APPARATUS

Warren M. Thurston, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed July 29, 1971, Ser. No. 167,297
Claims priority, application Canada, Oct. 16, 1970, 095770
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 S **5 Claims**



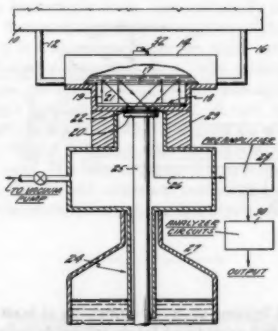
An apparatus for vaporizing liquid samples containing impurities comprising a sample vaporizing and vapor receiving member having a surface portion thereof heated above the Leidenfrost point. The vaporized sample is drawn by a vacuum to a mass spectrometer for analysis through a passageway in the member that opens to the heated surface portion. Impurities in the sample remain in the liquid phase.

3,751,661

ENGINE OIL INSPECTION SYSTEM USING X-RAY FLUORESCENCE

Louis L. Packer, Enfield; William A. Bruton, East Hartford, and Bernard A. Woody, Rockville, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 10, 1970, Ser. No. 44,954
Int. Cl. G01n *23/22*
U.S. Cl. 250—43.5 R **8 Claims**

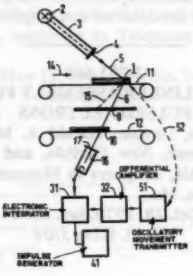


The concentration of metal wear particles in the lubricating oil system of engines such as aircraft gas turbines is continuously monitored by using x-ray fluorescent techniques. A beta excited x-ray source such as promethium-147 is mounted in a novel annular apposition target arrangement, and supplies primary x-rays to circulating engine oil. Depending on the source and target composition, selected metals such as iron in the oil will emit secondary fluorescent radiation which is measured by a lithium-drifted silicon semiconductor detector. Concentrations of metals as low as 2 parts per million may be detected.

3,751,662
X-RAY TOPOGRAPHY APPARATUS

Heinrich Grienauer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 20, 1971, Ser. No. 190,722
Claims priority, application Germany, Oct. 20, 1970, P 20 15 511.1
Int. Cl. H01j 37/20
U.S. Cl. 250—275 4 Claims

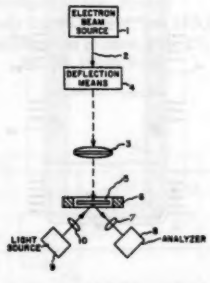


This invention provides an improvement in an X-ray topography apparatus for photographing grid distortions of a monocrystalline solid body. In the X-ray apparatus which includes a rotary oscillatory drive in communication with its feed line, the crystalline body to be examined is oscillated along the feed line about an axis in the plane of the feed line and perpendicular to said plane formed by the inciding and refractory X-rays of the apparatus with the crystalline body, the amplitude of the rotary oscillation being set to a sufficiently low value to maintain the level of X-ray diffraction constant, and the improvement comprising an electronic follow-up device in direct communication with the oscillatory drive to continuously readjust the zero point of the oscillation to provide a maximum intensity of the diffracted X-ray beam recorded.

3,751,663
MAGNETISABLE MATERIAL FOR DETECTING AND/OR RECORDING ELECTROMAGNETIC RADIATION AND ELECTRONS

Antonius Gerardus Hendrikus Verhulst; Theodoor Holtwijk; Willem Lems, and Ulrich Ernst Enz, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 94,900, Dec. 3, 1970, abandoned.
This application Jan. 7, 1972, Ser. No. 216,220
Claims priority, application Netherlands, Dec. 6, 1969, 6918364
Int. Cl. G01t 1/00
U.S. Cl. 250—472 1 Claim



A device for detecting and/or recording electron and electromagnetic radiation employing as an active element a material having a magnetic parameter such as coercivity, permeability or magnetic permeability which changes upon exposure to such radiation. Materials suitable for this purpose are $Y_3Fe_{4.90}Nb_{0.1}O_{12}$, mixed crystals of (NiZn) Co_2O_4, and (NiZn) Fe_2O_4, and mixed crystals of

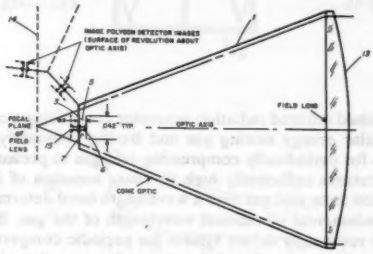
$$BFe_{2-\delta-E}^{3+}Fe_E^{2+}O_4 \text{ and } B_1Z_{2-\delta}^{3+} - EA_{1-\delta}Z_E^{2+}O_4$$

where $0 \leq \delta <$ and $0 \leq E < 1$, B and B_1 are bivalent Ni, Zn, Co, Mg, Mn or (LiFe) 0.5 and mixtures thereof, A and A_1 are metals having a valence unequal to three, and Z is trivalent Co, Mn, or Cr and combinations thereof.

3,751,664
INFRARED DETECTOR SYSTEM

Gerald Falbel, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Aug. 7, 1972, Ser. No. 278,689
Int. Cl. G01j 5/02
U.S. Cl. 250—353 7 Claims

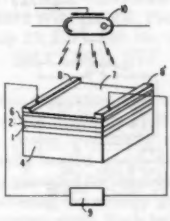

BASIC POLYGON DETECTOR IMAGES (SURFACE OF REVOLUTION ABOUT OPTIC AXIS)
FOCAL PLANE OF FIELD LENS
FIELD LENS
OPTIC AXIS
CONIC OPTIC

A detector flake, such as a pyroelectric detector, which has leads going to the two faces of the flake, is mounted in a truncated collecting cone spaced from the truncated end from one quarter to twice the diameter of the flake. A field lens is provided imaging the entrance aperture to the optical system on a focal plane which would go through the apex of the cone if it were projected. The truncation is a mirror, except for a small central hole through which one lead for the detector passes, and as a result, both sides of the detector flake are utilized. Another modification replaces the flat mirror at the truncation with a henispherical reflecting cup and a detector flake mounted on edge, that is to say, with its surfaces parallel to the axis of the cone.

3,751,665
PREHEAT TYPE COPYING APPARATUS

Shinichi Yabe, and Tomio Okada, both of 210 Nakanuma, Minami Ashigara-machi, Ashigara-kamigun, Kanagawa, Japan

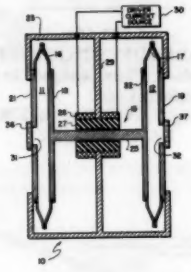
Filed July 29, 1971, Ser. No. 167,338
Claims priority, application Japan, July 30, 1970, 45/81316
Int. Cl. G01n 21/34
U.S. Cl. 250—317 4 Claims



A preheat-type copying apparatus wherein an original and a heat-sensitive copying paper are placed between a heat-resist-

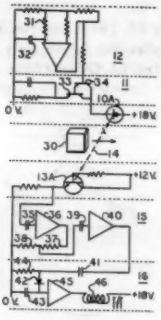
ing press plate transparent to infrared rays and a cushion member. An electroconductive film for preheating the copying paper, and transparent to infrared rays, is provided on the surface of the press plate.

3,751,666
INFRARED GENERATOR
William F. Hug, 1100 S. Los Robles St., Pasadena, Calif.
Filed Oct. 11, 1972, Ser. No. 296,684
Int. Cl. H01j *35/00*
U.S. Cl. 250—495 **16 Claims**



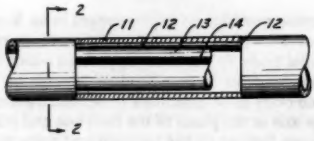
A pulsed infrared radiation generator comprising a confined molecular energy storing gas and having resonantly driven means for periodically compressing said gas to pressures and temperatures sufficiently high to cause emission of infrared radiation from said gas over a wavelength band determined by the fundamental vibrational wavelength of the gas. By using such a resonantly driven system for periodic compression of the gas within an enclosed chamber, a large portion of the unradiated internal energy in the molecular gas, as well as the kinetic energy of the driven compression mechanism, can be recovered. The generator further includes second energy storing means which may comprise either a second gas-filled chamber arranged back-to-back with the first gas-filled chamber, or a spring attached to the resonantly driven compression mechanism.

3,751,667
RADIATION PATH CONTINUITY TRANSDUCER OF HIGH PASS FREQUENCY
George F. Quittner, 1780 Cumberland Rd., Cleveland, Ohio
Continuation-in-part of Ser. No. 873,154, Nov. 3, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,570
Int. Cl. G01j *3/00*
U.S. Cl. 250—351 **15 Claims**



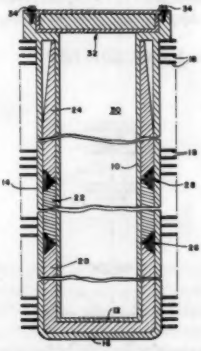
A signal is generated at a frequency substantially higher than powerline frequency and used to modulate a radiation emitting device. A radiation responsive device detects the modulated radiation together with any ambient radiation from other sources. AC coupling removes any unmodulated component from the output of the radiation responsive device, and high pass filtering greatly attenuates any components of the signal at the first harmonic of power line frequency and lower. Those frequencies which are substantially higher than powerline first harmonic are amplified and detected, and are utilized to signal whether or not the modulated radiation path is or is not interrupted. Provisions are disclosed to decrease the possibility that ambient radiation, not from the specially modulated source, will saturate the detector and amplifier system.

3,751,668
CONCENTRIC CYLINDER ASSEMBLY FOR PRODUCING PULSED NEUTRONS
Harold L. Coleman, Dayton; Harold A. Malson, Kettering; Howard R. DuFour, New Carlisle, and Richard G. Olt, Dayton, all of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.
Filed Oct. 28, 1970, Ser. No. 84,675
Int. Cl. G21g *3/04*
U.S. Cl. 250—84.5 **5 Claims**



Pulsed bursts of neutron are produced from a source in which strips of radioactive material are placed on the inner surface of a cylinder, and low Z target material is placed on the outer surface of an inner concentric cylinder. As the inner cylinder is rotated, the radioactive material and the target material are matched to produce a burst of neutrons.

3,751,669
RADIATION SHIELDING MEANS JOINT AND METHOD OF MAKING SAME
Fred J. Bush, Jr., Malvern, Pa., assignor to NL Industries, Inc., New York, N.Y.
Filed May 24, 1971, Ser. No. 146,356
Int. Cl. G21f *5/00*
U.S. Cl. 250—506 **14 Claims**



A pair of radiation shielding members such as uranium castings are provided with tapered end portions which are positioned adjacent one another. The joint between the radiation shielding members includes a plurality of filler members

disposed between said tapered portions and the filler members being positioned in contact with one another and radially outwardly of one another, the outer ones of said filler members overlapping inner ones of said filler members in a longitudinal direction. The filler members are welded to the tapered ends of the radiation shielding members along the opposite circumferentially extending edges of the filler members.

3,751,670

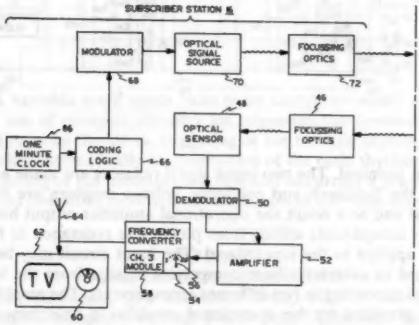
SUBSCRIPTION COMMUNICATION SYSTEM

Seymour L. Grodner, Hartsdale, N.Y., and Marvin I. Radlauer, Matawan, N.J., assignors to Telebeam Corporation, New York, N.Y.

Filed May 11, 1971, Ser. No. 142,331

Int. Cl. H04b

U.S. Cl. 250—199 **9 Claims**



A subscription communication system is described wherein each one of many subscribers has his own individual optical communications service link from a common distribution station. As a result, there is positive control over the communications service provided to each subscriber, and information as to the subscriber's economic accountability for such service is generated right at the distribution station. A service request communications link is also provided from each subscriber station to the distribution station, preferably in the form of an optical signal, and the economic accountability of the subscriber is dependent upon receipt of the request signal. The service and request signals are affected equally by adverse weather conditions, so that the subscriber is not billed for service under weather conditions which are below the threshold of system availability.

3,751,671

OPTO-ELECTRONIC RELAY

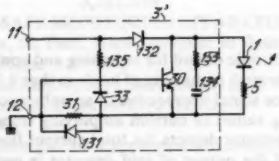
Maurice A. Maniere, Conflans-Sainte-Honorine, and Pierre Thepaut, Paris, both of France, assignors to Lignes Telegraphiques et Telephoniques, Paris, France

Filed July 25, 1972, Ser. No. 275,061

Claims priority, application France, July 27, 1971, 7127503

Int. Cl. H04b 9/00

U.S. Cl. 250—199 **2 Claims**



An opto-electronic relay comprising an electroluminescent diode fed from unipolar or bipolar telegraph signals and a phototransistor converting the light radiated by the electroluminescent diode into relayed electric signals. Protection means are provided against overload of said diode by too strong input signals. Distortion correction means are also provided for improving the waveform of the relayed signals. The protection means include the series connection of a resistor with said diode and at least one silicon diode and a transistor shunting said diodes, while the distortion correction means include a series R.C. circuit shunting said electroluminescent and protection diodes.

3,751,672

OPTO-ELECTRONIC APPARATUS FOR MEASURING AND CONTROLLING THE CONCENTRATION OF SOLUTIONS

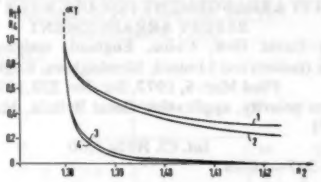
Alfred Michel, Erlangen, and Werner Rummel, Grossdechsendorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 28, 1972, Ser. No. 248,388

Claims priority, application Germany, May 3, 1971, P 21 21 744.7

Int. Cl. G01n 21/46

U.S. Cl. 250—218 **22 Claims**



An improved opto-electronic apparatus for determining the concentration of solutions includes a probe having a prismatic immersion tip with at least two internally reflecting surfaces. A light-emitting means in the probe body directs a collimated beam of light through the prism toward a first reflecting surface of the probe tip, the incident beam making an angle with the first reflecting surface approximately equal to a critical angle of total reflection corresponding to the nominal index of refraction of the solution being examined. The included angle between subsequent reflecting surfaces is preferably approximately at least twice this critical angle. The light beam is reflected from a last reflecting surface toward an adjacent light receiving surface optically connected with a light-sensitive means in the probe body. Variations in the concentration of the solution in which the probe tip is immersed affect the intensity of the light beam finally reflected to the light-sensitive means, and the amplified output of the light-sensitive means provides a voltage suitable for use in measuring and controlling the concentration of the solution.

3,751,673

ELECTRICAL POWER GENERATING SYSTEM

Roger S. Sprankle, 2051 Woodlyn Rd., Pasadena, Calif.

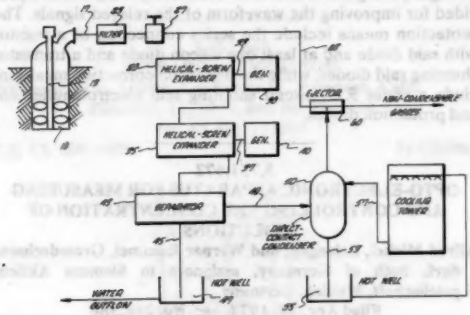
Filed July 23, 1971, Ser. No. 165,536

Int. Cl. H02k 7/18

U.S. Cl. 290—52 **14 Claims**

An electrical power generating system is disclosed which utilizes the entire amount of energy available in geothermally heated water. The power generating system comprises a source of geothermally heated water. One or more helical screw expanders are provided for receiving said geothermally heated water and utilizing the energy generated therein for driving at least one output shaft. Each helical screw expander comprises a pair of mating helical rotors rotatably mounted within a housing in a timed relationship. A generator is coupled to each output shaft for generating electricity. As the

geothermally heated water flows through the expanders, the liquid drops in pressure and a portion thereof flashes to the vapor phase. The mass flow of vapor continues to increase as



the pressure drops through the expanders. This increase in the mass flow of the vapor expands the chambers formed by the rotors to rotatably drive the rotors and the output shafts connected thereto.

3,751,674

CIRCUIT ARRANGEMENT FOR USE WITH VEHICLES SAFETY ARRANGEMENT

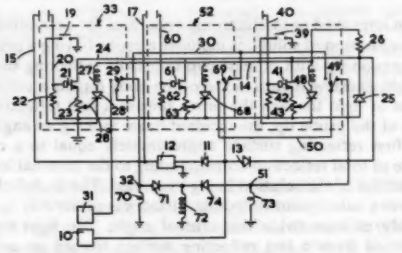
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 6, 1972, Ser. No. 232,127

Claims priority, application Great Britain, Mar. 12, 1971, 6,798/71

Int. Cl. H02g 3/00

U.S. Cl. 307—10 SB **18 Claims**



A circuit arrangement for use with a vehicle safety harness includes an alternating signal generator and a pair of conductors respectively in an associated vehicle seat and a part of the harness, these conductors forming capacitor plates between which alternating current flows only when the harness is in position on an occupant of the seat. A switching circuit is responsive to this current flow and also to the closure of a switch associated with the harness buckle to complete a circuit to the vehicle starter.

3,751,675

ANALOG CONTROL SYSTEM WITH PLURAL STATES HAVING A COMMON POWER SOURCE ARRANGEMENT AND MEANS FOR ELIMINATING ERROR VOLTAGES ARISING THEREFROM

Akira Ohte, and Minoru Tamuki, both of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

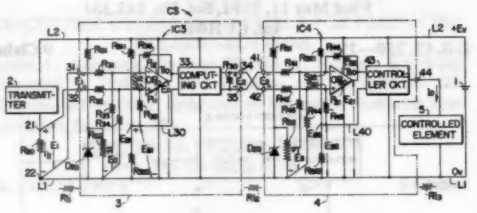
Filed Oct. 21, 1971, Ser. No. 191,413

Claims priority, application Japan, Oct. 27, 1970, 45/94439

Int. Cl. H02j 13/00

U.S. Cl. 307—34 **23 Claims**

A control system of the type including a plurality of stages each drawing power from power lines connected to a common power source, characterized by an input circuit in each of said stages for receiving input signals and for eliminating error voltage components arising from the line resistance of said power lines, thereby affording accurate signal processing. Each input circuit comprises an operational amplifier drawing power from the power lines, series resistors for applying the input signal to the differential signal input terminals of the operational amplifier, and a resistor for negatively feeding back a portion of the operational amplifier output to one signal input terminal. A reference voltage derived from the power source is applied through a resistor to the other signal



input terminal. The two input signal resistors are made equal and the feedback and reference voltage resistors are made equal and as a result the operational amplifier output has no error components arising from power line resistance or from bias applied to the input signal. The input circuit may be arranged to subtract a base component voltage from the input signal according to two different arrangements. The amplification provided by the operational amplifier is determined by the ratio of the feedback or reference voltage resistors to the signal input resistors, or by the ratio of a voltage divider at the operational amplifier output provided to feed back a portion of the output through said feedback resistor.

3,751,676

CURRENT CONTROL CIRCUIT FOR A PLURALITY OF LOADS

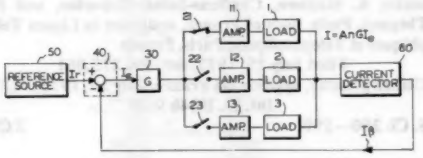
Yoshiaki Igarashi; Kazutsugu Kobayashi, and Hisayuki Matsumoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 18, 1971, Ser. No. 154,548

Claims priority, application Japan, June 26, 1970, 45/56342; June 26, 1970, 45/56344

Int. Cl. H02j 3/00

U.S. Cl. 307—31 **4 Claims**



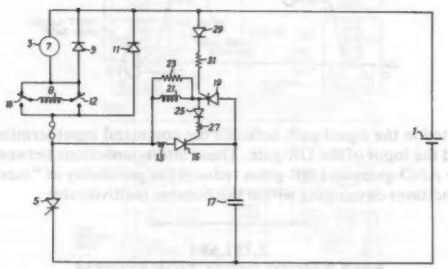
An electronic circuit for switching and controlling a current flowing through a plurality of loads so that it is proportional to a reference signal irrespective of an unbalance and a varaition of the h_{FE} values of current amplifying transistors wherein a current detector detects the total current flowing through the loads and the output of said detector is used as a feedback signal. When the circuit is used to control an electronically commutated motor, a motor generating a smooth and constant torque is easily obtained.

3,751,677

VARIABLE MARK SPACE RATIO PULSE CONTROLLERS

David Gurwicz, Gateshead, England, assignor to Sevcon Engineering Limited, Durham, England

Filed May 9, 1972, Ser. No. 251,821
Int. Cl. H03k 3/00
U.S. Cl. 307—106 8 Claims



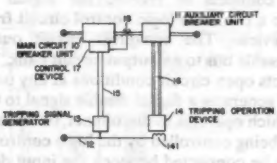
A variable mark space ratio pulse controller which avoids the use of complex circuitry for triggering the commutating and reversal thyristors, triggering of the reversal thyristor occurring automatically on conduction of the main thyristor and triggering of the commutating thyristor occurring a pre-determined time after initiation of conduction of the main thyristor.

3,751,678

CIRCUIT BREAKER DEVICE

Kikuo Kawasaki, and Katsuhiro Oose, both of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Nov. 15, 1971, Ser. No. 198,799
Claims priority, application Japan, Nov. 20, 1970, 45/102544
Int. Cl. H01h 9/30
U.S. Cl. 307—136 10 Claims


11 AUXILIARY CIRCUIT BREAKER UNIT
MAIN CIRCUIT 10 BREAKER UNIT
CONTROL 17 DEVICE
TRIPPING SIGNAL GENERATOR
14 TRIPPING OPERATION DEVICE

A circuit breaker device comprising a main circuit breaker unit adapted to interrupt the flow of a large current and an auxiliary circuit breaker unit adapted to interrupt the flow of a current smaller than the first-mentioned current and connected in series with the former unit, the operating speed of the main circuit breaker unit being set quicker than that of the auxiliary circuit breaker unit, a circuit-breaking operation of the main circuit breaker unit being initiated only when a load current which is too large for the device occurs.

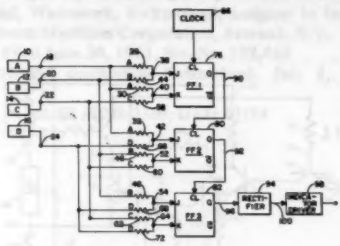
3,751,679

FAIL-SAFE MONITORING APPARATUS

Donald J. Rotier, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 4, 1971, Ser. No. 121,072
Int. Cl. H03k 19/42, 21/00, 5/18
U.S. Cl. 307—204 6 Claims

The specification discloses apparatus which acts to monitor the presence of logic signals indicative of a control condition at a majority of the circuit elements sampled. A plurality of JK flip-flops are cascaded, with a source of clock signal connected to the toggle input of the first flip-flop, and the output of each flip-flop fed to the toggle input of the next succeeding flip-flop, the output of the last flip-flop being connected to an



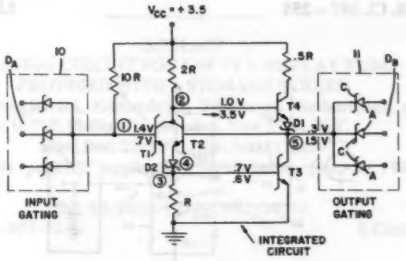
indicator. The J and K input terminals of the flip-flops receive biasing signals from sampled circuit elements which are combinatorially connected to the J and K flip-flop terminals.

3,751,680

DOUBLE-CLAMPED SCHOTTKY TRANSISTOR LOGIC GATE CIRCUIT

David A. Hodges, Berkeley, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Mar. 2, 1972, Ser. No. 231,185
Int. Cl. H03k 17/00
U.S. Cl. 307—213 8 Claims



A double-clamped Schottky transistor logic gate circuit which includes a totem pole output with Schottky clamp transistors with the pull-down transistor supplying a stable low output level and the pull-up transistor provides a high stable output level voltage by use of a negative feedback arrangement which includes level shifting Schottky diodes and a second Schottky clamp transistor to control the current to the pull-up transistor. An output gating arrangement utilizing Schottky diodes provides reduced capacitances and chip area by placing the cathode of the diode in the same isolated integrated semiconductor regions as the collector of the pull-down transistor. In addition, temperature compensation is provided and noise immunity is improved by integrating a voltage regulator into the same integrated circuit.

3,751,681

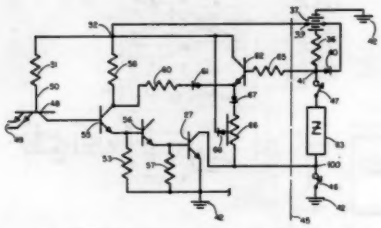
MEMORY SELECTION APPARATUS

William F. Jordan, Jr., Wellesley, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Division of Ser. No. 675,081, Oct. 4, 1968, Pat. No. 3,588,851, Continuation-in-part of Ser. No. 536,736, March 23, 1966, abandoned, Continuation-in-part of Ser. No. 536,921, March 23, 1966, abandoned. This application Dec. 7, 1970, Ser. No. 95,904
Int. Cl. H03k 19/36, 19/24, 17/04
U.S. Cl. 307—215 4 Claims

Electronic selection circuits for operating coincident-current magnetic memories, and like apparatus, are provided for

construction essentially entirely as integrated circuits, even the output drive stages. The circuits are arranged to transform ground referenced input signals to output signals for driving



floating reactances without the transformers required in the prior art for voltage isolation. Further, the new circuits drive these reactive loads without excessive power dissipation or excessive transient voltages.

3,751,682

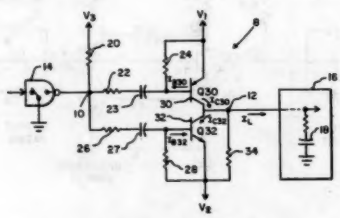
PULSED VOLTAGE DRIVER FOR CAPACITIVE LOAD

James A. Howe, Burnsville, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,465

Int. Cl. H03k *17/00*

U.S. Cl. 307—255 **13 Claims**



A voltage source of pulsed signals for charging or discharging a capacitive load is disclosed. The circuit includes two complementary transistors serially coupled along their output (collector and emitter) electrodes between the two voltage sources as a push-pull driver. Their input (base) electrodes are each coupled in parallel by a respectively associated serially aligned capacitor and resistor to an input terminal that is driven by a binary logic level circuit while their common coupled output (collector) electrodes are coupled to a capacitive load.

3,751,683

COMBINED DATA AND SET-RESET FLIP-FLOP WITH PROVISIONS FOR ELIMINATING RACE CONDITIONS

Albertus Drost, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

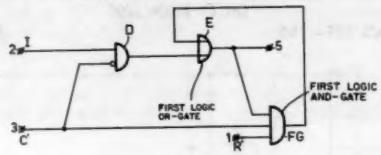
Filed Feb. 17, 1972, Ser. No. 227,162

Claims priority, application Netherlands, Feb. 23, 1971, 7102353

Int. Cl. H03k *19/22*

U.S. Cl. 307—218 **9 Claims**

A bistable multivibrator has input terminals for a reset, an information and a command signal. A first AND-gate and an OR-gate are cross-coupled to form a feedback loop. The reset input terminal is connected to an input of the first AND-gate. The information input terminal is connected to an input of a second AND-gate that has an output connected to an input of the OR-gate. The command input terminal is connected to inputs of both the first and second AND-gates. An invertor is in-



serted in the signal path between the command input terminal and the input of the OR-gate. These interconnections between the AND-gates and OR-gates reduces the possibility of "race" conditions developing within the bistable multivibrator.

3,751,684

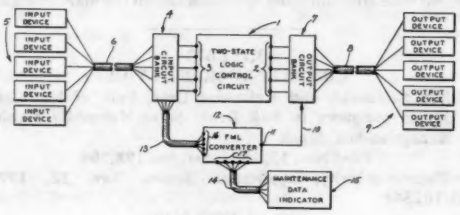
FAULT MODE DETECTION SYSTEM

Odo J. Struger, Mayfield Heights, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Apr. 14, 1972, Ser. No. 244,153

Int. Cl. H03k *19/38, 17/60;* **H02h** *7/20*

U.S. Cl. 307—202 **11 Claims**



A converter circuit which includes at least one fault mode logic gate connects to receive the digital input signals generated to a two-state logic control circuit from a plurality of input devices. The converter circuit output connects through a disable bus to an output circuit bank. The converter circuit detects open circuit conditions at any one of the input devices and generates a digital disable signal to the output circuit bank which operates to disconnect, or deenergize the output devices being controlled by the logic control circuit. Input circuits may be connected between the input devices and the converter circuit to provide a hardware reduction. Also, a maintenance data indicator circuit connects to the converter circuit and operates in response to digital malfunction signals generated thereby to identify any input device which becomes open circuited.

3,751,685

REDUNDANT PULSE SUPPLY SYSTEM

Hannes Jaeger, Am Buchet 24, 8021 Joking, Germany

Filed Dec. 2, 1971, Ser. No. 204,232

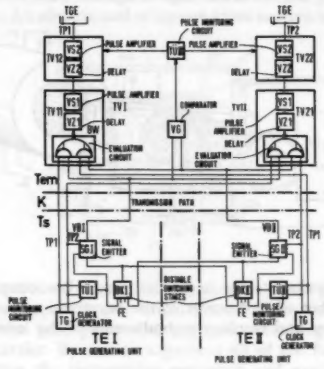
Claims priority, application Germany, Dec. 4, 1970, P 20 59 797.1

Int. Cl. H02h *7/20*

U.S. Cl. 307—219 **10 Claims**

A pulse supply system of the type having parallel-operating, like constructed pulse generating units is described. One unit functions as the active unit, while the other is a reserve unit with the posibility of switching between these states. Each of the duplicate pulse generators contains one stage of a bistable circuit, at the output of which is available an unambiguous signal indicative of the state of each pulse generator. A signal emitter is available in each pulse generating unit for producing an output indicative of the state of the applicable pulse

generating unit; the signal emitters being conditioned by the bistable circuit. An evaluation circuit for each output pulse phase is present in the circuit receiving the pulses; this circuit



receives both the signal emitter outputs and the pulse supply outputs. The evaluation circuit forwards only the pulse from the generator indicated as being in the active state.

3,751,686

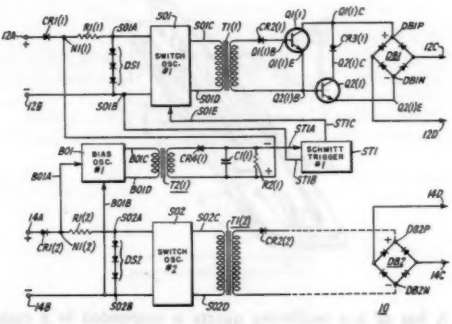
TELEGRAPH RELAY

John R. Sherwood, Arlington, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,582

Int. Cl. H03k *17/00*

U.S. Cl. 307—241 **12 Claims**



A solid state telegraph relay of the dual channel type is provided in which each signal channel output is constrained to OPEN and CLOSE as a function of the differential between the strengths of the respective input signals thereto. Each channel includes a Darlington output switch controlled by the output of a switching oscillator, the latter being controlled by a Schmitt trigger circuit which in turn is controlled by a bias oscillator cross coupled with the opposite channel and providing an output, to the trigger circuit, as a linear function of the signal strength in said opposite channel, in opposition to an input signal derived from the signal channel associated with said trigger circuit as a function of its input signal strength. Accordingly, when both input signals are equal the outputs of both signal channels are OPEN and when one of said input signals is greater than the other by a predetermined percentage differential, the output of that one of said signal channels will be constrained to CLOSE. Application of a variable bias to the input of one of said signal channels serves to selectively vary the Mark/Space time at the output of the other. Thus, the telegraph relay provided can function in both the differential mode and the bias mode.

3,751,687

INTEGRATED SEMICONDUCTOR CIRCUIT FOR DATA STORAGE

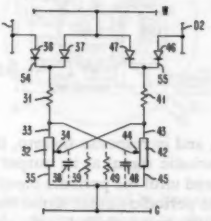
Wilhelm Jutzi, Wadenswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,465

Claims priority, application Switzerland, July 1, 1970, 9957/70

Int. Cl. H03k *3/26*; **G11c** *11/34*

U.S. Cl. 307—279 **2 Claims**



A storage circuit for binary data designed for application in a functional memory. The circuit uses Schottky gate field effect transistors. It is arranged to enable layout on a very small surface area of a monolithic semiconductor crystal. The circuit is a modified bistable multivibrator in which the two transistors have one electrode in common. Decoupled connections are arranged at the end of the load resistors remote from the transistors.

3,751,688

ERASING CIRCUIT FOR USE IN A DISPLAY TUBE PROVIDED WITH A STORAGE SCREEN

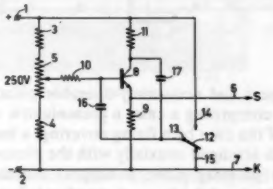
Rojk Hooghordel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,249

Claims priority, application Netherlands, Jan. 8, 1971, 7100211

Int. Cl. H03k *17/00*; **H01j** *29/41*

U.S. Cl. 307—246 **5 Claims**



To erase the information on a storage screen of a display tube there must be applied to the tube sudden potential variations which may have values of several hundreds of volts. By using a low-voltage transistor in emitter-follower connection in conjunction with transistor protective means and an appropriate RC time determination both the normal bias voltage and the sudden high-voltage potential variations may be applied to the tube.

This erasing circuit may be used in storage oscilloscopes.

3,751,689

ELECTRONIC LATCH CIRCUIT

William P. Hogg, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

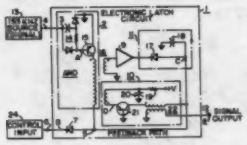
Filed July 22, 1971, Ser. No. 164,997

Int. Cl. H03k *19/24*, *5/18*, *17/26*

U.S. Cl. 307—246 **12 Claims**

An AND gate has a signal input to which a periodic signal is applied and a control input to which a control pulse is momen-

tarily applied. In response to the concurrent presence of the periodic signal and the control pulse at the respective inputs, a periodic signal is provided at the output of the AND gate. The periodic signal provided at the output of the AND gate is detected for charging a charge storage means to a voltage level of substantially the same level as the voltage level of the control pulse. This latter voltage level is fed back to the control



input of the gate, and in response thereto, the gate continues to provide the periodic signal at its output after the control pulse terminates and until the periodic input signal to the gate is interrupted. The periodic output signal from the gate is amplified in an amplifier and provided as the output signal of the latch circuit. In response to the sensing of the AND gate no longer providing the periodic output signal, the charge storage means then rapidly discharges through the amplifier.

3,751,690

PIEZOELECTRIC IGNITION APPARATUS

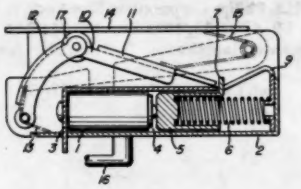
Osami Okamoto, Moriguchi-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 31, 1972, Ser. No. 222,207

Claims priority, application Japan, Feb. 2, 1971, 46/4652

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.7 **3 Claims**



A compact and accurately-operable piezoelectric ignition apparatus comprising a case, a piezoelectric element fixed on one side of the case by a fixing covering, a hammer and a first spring both arranged coaxially with the piezoelectric element, a hammer pressing plate, a support member, the hammer pressing plate and the support member being joined rotatably in an inverted-V shape at an end each thereof, and a pressure plate, the other end of the support member being attached to the case, the pressure plate having a free end in contact with the joint between the support member and the hammer pressing plate, the hammer having a protrusion which engages with and disengages from the other end of the hammer pressing plate as the pressure plate is depressed.

3,751,691

ROTATIONAL TRANSDUCER USING HALL EFFECT DEVICES

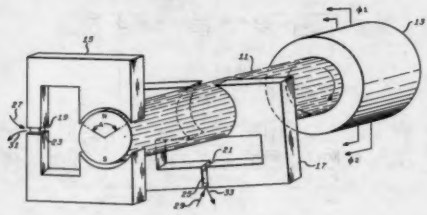
Robert C. Ellis, Jr., Durham, N.C., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,061

Int. Cl. H03b *15/00*

U.S. Cl. 310—10 **10 Claims**

A brushless d.c. rotational transducer provides output voltages of low harmonic content. A diametrically magnetized rotatable shaft supplies flux for two magnetic stator members magnetically coupled to the shaft and disposed in space quadrature with respect to each other. A Hall effect device in each stator member is responsive to the instantaneous magnetic flux density in the stator member. The stator members are proportioned so that their pole arcs extend through an



angle equivalent to the angle that would be occupied by an even number of half waves of the harmonic to be rejected. Tachometer and resolver embodiments of the invention are described.

3,751,692

TEMPERATURE INSENSITIVE PIEZOELECTRIC RESONATOR MOUNTING

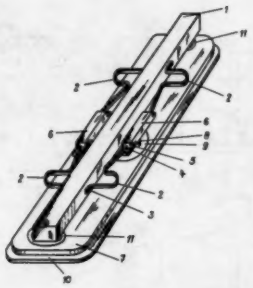
Hubert Choffat, Neuchatel, Switzerland, assignor to Centre Electronique Horloger SA, Neuchatel, Switzerland

Filed Nov. 4, 1971, Ser. No. 195,749

Claims priority, application Switzerland, Nov. 23, 1970, 17321/70

Int. Cl. H04r *17/00*

U.S. Cl. 310—9.1 **4 Claims**



A bar of *x–y* oscillating quartz is suspended in a casing under vacuum by two pairs of suspension wires fixed on opposite faces of the bar, centrally facing ends of each pair of wires being fixed to a respective bar section each secured to a single respective support filament passing through a central insulating part of the casing base. Final adjustment of the frequency is effected by the deposit of material onto the ends of the quartz bar after mounting same, but prior to encapsulation and evacuation.

3,751,693

MOVING COIL MOTOR WITH NO STRAY FLUX

Andrew Gabor, Danville, Calif., assignor to Diablo Systems, Incorporated, Hayward, Calif.

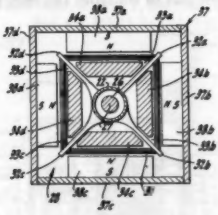
Filed Feb. 14, 1972, Ser. No. 226,139

Int. Cl. H02k *41/02*

U.S. Cl. 310—13 **3 Claims**

A voice coil motor for driving the read/write heads of a magnetic disk drive unit includes an outer elongated enclosure of square cross section and an inner enclosure of similar configuration both of which serve as pole pieces for elongated magnets which are affixed to the inner walls of the outer en-

closure. The permanent magnets are polarized so that their axes are perpendicular to the coincident center axis of the elongated enclosures. A slidable element is mounted on a rod extending along this center axis, the slidable element driving the read/write head through an aperture in the end plate of the enclosures. An electric coil of square cross section is mounted



in an air gap between the inner pole pieces and the permanent magnets by support fingers which extend through slots in the corner of the pole pieces the supports extending from the movable carrier. By this arrangement all of the flux is contained within the rectangular enclosure and practically no stray flux influences the magnetic recording medium.

3,751,694

APPARATUS FOR PRODUCING HIGH FREQUENCY VIBRATIONS OF A SIEVE SCREEN

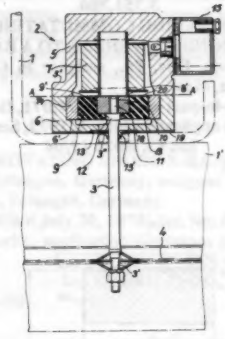
Gunter Erlenstaedt, Remscheid, Germany, assignor to "Rhewum" Rheinische Werzeug-Machinenfabrik Gmb H, Remscheid-Luttringhausen, Germany

Filed Aug. 26, 1971, Ser. No. 175,204

Claims priority, application Germany, Apr. 26, 1971, P 21 20 244.8

Int. Cl. H02k *35/00*

U.S. Cl. 310—29 **9 Claims**



In apparatus for producing high frequency vibrations of a seive screen and composed of a vibratory system including a rod which extends transverse to the screen surface and is attached to the screen at a point, and an electromagnetic vibration generator which acts on the rod and applies thereto vibrations which in turn are transferred to the screen, the rod is connected to a rubber return spring which is tuned to the vibratory system.

3,751,695

ONE-WAY DIRECTIONAL CONTROL MEANS FOR SYNCHRONOUS A.C. MOTORS

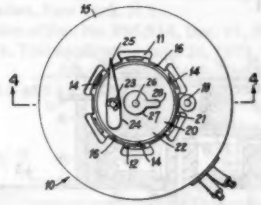
Edwin Richard Morley, Two Rivers, and Gerald Frederick Schmidt, Manitowoc, both of Wis., assignors to AMF Incorporated, White Plains, N.J.

Filed Mar. 24, 1972, Ser. No. 237,868

Int. Cl. H02k *7/10*

U.S. Cl. 310—41 **6 Claims**

A synchronous A.C. motor having rotor means and a stator means which has included therewith fixed abutment means. The rotor means includes a rotatable rotor shaft having a radially extending cam fixed on one end thereof, and a rotor rotatable on the shaft and having an elongated stop member pivotably mounted thereon. Upon rotation of the rotor in one direction the elongated stop member engages the cam means



and the stop member is positioned to its extended position in which it engages the abutment means to stop the rotor. Upon rotation of the rotor in the opposite direction the elongated stop member engages the cam means and the stop member is positioned to its retracted position in which it interlocks the rotor and shaft to permit rotation of shaft and rotor in unison.

3,751,696

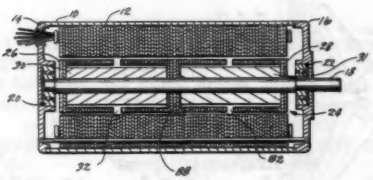
TOOTH ARRANGEMENT FOR A STEPPING MOTOR

Anthony P. Morreale, Whittier, Calif., assignor to Computer Devices Corporation, Santa Fe Springs, Calif.

Filed Nov. 22, 1971, Ser. No. 200,772

Int. Cl. H02k *37/00*

U.S. Cl. 310—49 **8 Claims**



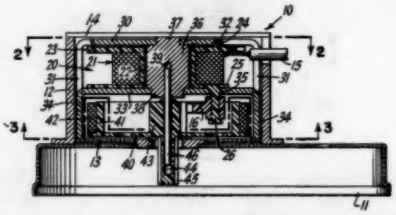
A stepping motor includes a stator assembly and a rotor assembly having teeth projecting toward each other. The rotor assembly includes a plurality of permanent magnets spaced-apart along the rotational axis with repelling poles of adjacent magnets facing each other. The teeth on the rotor project from a plurality of axially spaced-apart cylindrical members that cooperate with the magnets to form magnetic poles of the rotor with an interior member cooperating with near ends of adjacent magnets to form a single magnetic pole. In operation, magnetic flux lines between the stator and rotor assemblies split to form parallel circuits having a common path through the interior member.

The teeth are arranged in an alternating offset configuration having three axially extending sections corresponding to the three cylindrical rotor members. For each section there are a plurality of teeth on the stator that attract teeth on the rotor member and a separate plurality of teeth on the stator that repel teeth on the rotor member. Each tooth of the plurality of attracted teeth on the rotor member aligns itself with a tooth on the stator. On the other hand, each tooth of the plurality of repelling teeth on the stator projects toward the middle of the space between adjacent teeth on the rotor and repel them equally.

3,751,697
SYNCHRONOUS MOTOR CONSTRUCTION WITH DIRECTIONAL CONTROL

Edwin R. Morley, and Roger E. Jacobs, both of Two Rivers, Wis., assignors to AMF Incorporated, White Plains, N.Y.

Filed June 1, 1972, Ser. No. 258,611
Int. Cl. H02k 7/118, 21/08
U.S. Cl. 310—41 6 Claims

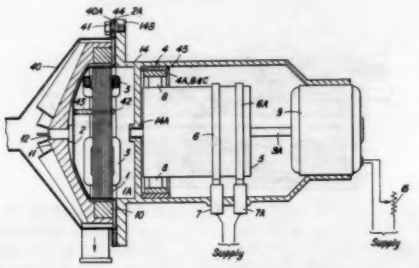


Means for assembling and aligning the stator assembly with two pole pieces of a synchronous permanent magnet motor without the use of jigs. The alignment means also provides a pivot for a cam follower for the one way directional control of the motor.

3,751,698
PLURAL ELECTRIC MOTORS

Alan J. Walker, 387 Maidstone Rd., Gillingham, Kent, England

Filed June 28, 1971, Ser. No. 157,576
Claims priority, application Great Britain, June 30, 1970, 31,479/70
Int. Cl. H02k 21/10
U.S. Cl. 310—126 9 Claims



This invention relates to electric motors in which the commutating means are controllable and operated independently of the armature. The invention also relates to such motors where the armature is integral with the impeller of a pump and fluidly isolated from the stator and other parts of the motor.

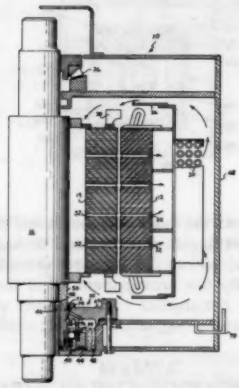
The invention affords speed control of electric motors.

3,751,699
GAS FILLED VERTICAL DYNAMOELECTRIC MACHINE

Robert F. Gleichman, San Jose, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,369
Int. Cl. H02k 5/16
U.S. Cl. 310—90 12 Claims

A totally enclosed, inert gas filled vertical dynamoelectric machine is described wherein liquid lubricant in the lower bearing housing is employed to seal the machine output shaft against the loss of inert gas. To inhibit loss of lubricant from the seal, a stationary oil sleeve concentrically disposed within a zone between the rotor shaft and shaft sleeve protrudes to a height in excess of the oil level within the housing by an amount at least equal to the change in level produced by the pressure of the inert gas within the machine. The lower bearing preferably is enclosed by a selectively notched bearing cover which serves in conjunction with annular grooves upon the shaft sleeve to prevent oil creepage along the exterior of the shaft while blow-out of oil from the seal by excessive gas

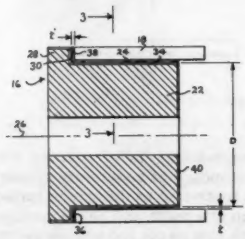


pressure within the machine is inhibited by a liquid filled, generally U-shaped tube communicating the motor interior with the ambient. To prevent turbulence produced by rotation of the rotor from breaking the seal, the lubricant should extend to a level above the bearing or a selectively apertured partition could be inserted between the lower end of the shaft sleeve and the bearing.

3,751,700
COMMUTATOR HAVING COMMUTATING SEGMENTS ADHESIVELY BONDED IN SHEAR TO A BASE MEMBER

Quintin Perry Cole, Erie, Pa., assignor to General Electric Company, Lynn, Mass.

Continuation-in-part of Ser. No. 77,071, Oct. 1, 1970, abandoned. This application Mar. 1, 1972, Ser. No. 230,677
Int. Cl. H02k 13/04
U.S. Cl. 310—235 8 Claims

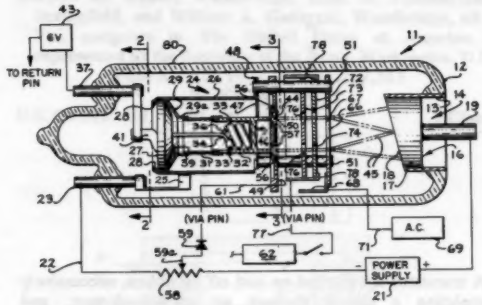


A commutator in which a base member having a mounting portion of substantial axial extent and an annular planar surface axially facing the mounting portion has electrically conductive commutating segments secured to the mounting portion. Each commutating segment has a planar surface at an end thereof closely adjacent the annular planar surface, and the end planar surface is adhesively bonded to the annular planar surface by a relatively thin layer of adhesive material which is electrically conductive and has high dielectric strength. The thickness of the adhesive layer is sufficiently small that the bonds between the layer and the adjacent surfaces are substantially stressed in shear during operation of the commutator in a dynamoelectric machine.

3,751,701
CONVERGENT FLOW HOLLOW BEAM X-RAY GUN WITH HIGH AVERAGE POWER

Nicholas M. Gralenski, Aptos, George Wada, Palo Alto, and David J. Bates, Los Altos, all of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Filed Mar. 8, 1971, Ser. No. 122,065
Int. Cl. H01j *35/14, 35/30*
U.S. Cl. 313—57 3 Claims

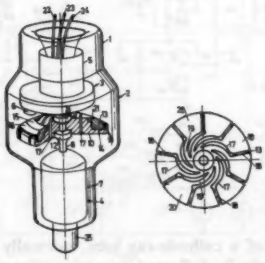


An X-ray generating tube characterized by grid means formed with narrow annular slits which serve to isolate the cathode from being influenced by the high voltage of the anode. According to one embodiment, a target formed as a hollow conical surface of revolution closed at one end forms an X-ray window at one end of the tube. According to another embodiment, the axis of the tube remains substantially unobstructed whereby X-rays generated from a conical surface of the type noted above are emitted at the end of the tube disposed opposite the target end. Another embodiment combines the advantages of the first named and last named embodiment by utilizing concentricly oriented coaxially disposed electron beam control elements formed with a narrow annular slit for passing electrons radially into the axial region of the tube.

3,751,702
ROTATING ANODE X-RAY TUBE

Kurt Dietz, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed July 20, 1970, Ser. No. 56,554
Claims priority, application Germany, July 23, 1969, P 19 37 351.4
Int. Cl. H01j *35/04*
U.S. Cl. 313—60 11 Claims

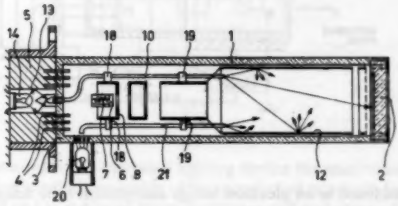


This invention relates to an X-ray tube of the rotating-anode type which includes a disk which is resiliently mounted upon a shaft and also contains an electron impinging portion thereupon. The anode is provided with a plurality of recesses therewithin which produces the advantages which will be hereinafter summarized.

3,751,703
VIDICON HAVING EXTERNAL LIGHT SOURCE ADJACENT SEALED END, AND LIGHT CONDUCTOR TRANSMITTING LIGHT THEREFROM TO TARGET

Willem Paul Weijland; Hans Georg Gerlach; Antonius Joannes Mariea Van den Beld, and Louis Maarten Swart, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 885,914, Dec. 17, 1969, Pat. No. 3,628,076. This application June 24, 1971, Ser. No. 156,565
Int. Cl. H01j *31/38, 29/89*
U.S. Cl. 313—65 LF 3 Claims

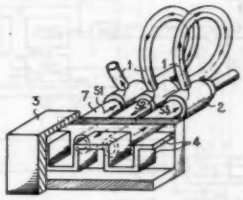


A television camera tube of the vidicon type in which a photoconductive screen at one end of an evacuated envelope receives an image of a scene to be televised and is scanned by an electron beam. An external auxiliary light source is provided for uniformly illuminating the screen and light from this source is conducted through a light conductor to the tip of an exhaust tube for the envelope opposite the screen so that the screen is illuminated uniformly by light from the auxiliary light source.

3,751,704
DELAY LINES COOLED BY LIQUID CIRCULATION AND ELECTRONIC TUBES UTILISING SUCH DELAY LINES

Robert Guillemet, and Pierre Ribout, both of Paris (8eme), France, assignors to Thomson-CSF, Paris, France

Filed Dec. 7, 1971, Ser. No. 205,632
Claims priority, application France, Dec. 30, 1970, 7047286
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 5 Claims

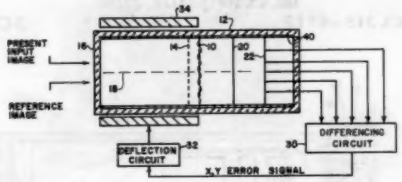


Delay line in the form of a helix for a travelling wave tube is provided including a plurality of hollow conductive tube elements forming turns of the helix. Fluid distribution means communicates with the tube elements for circulating fluid therethrough and includes alternate feeds to each of said turns and alternate outputs from each of said turns, said alternate feeds and outputs forming conductive elements coupled to the extremities of each of the conductive tube elements of the helix.

3,751,705
ELECTRON IMAGE DATA PROCESSING APPARATUS

John R. Shoemaker, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation of Ser. No. 872,677, Aug. 10, 1971, abandoned. This application Aug. 10, 1971, Ser. No. 170,656
Int. Cl. H01j 31/48
U.S. Cl. 315—11 4 Claims

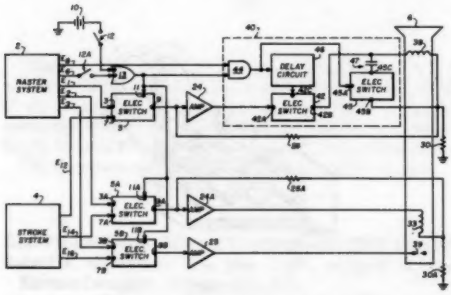


Disclosed is an electron image correlation tube adapted to achieve correlation without mechanical or electrical nutation. This eliminates the need for considerable electronic equipment in system complexity. Fundamentally, the invention utilizes an electronic lens in combination with a sectioned anode cooperating with a differencing circuit to achieve the correlation. The outputs of the various sections of the sectioned anode are analyzed by the differencing circuit and the resultant signals are, through a deflection circuit, utilized to control the deflection yokes of the correlation tube and consequently accurately achieve the correlation.

3,751,706
MEANS FOR CONSERVING ENERGY DURING LINE RETRACE OF A RASTER TYPE DISPLAY

Abner Owens, Jr., Paramus, and Donald Weinstein, Fair Lawn, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Feb. 3, 1971, Ser. No. 112,358
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 11 Claims

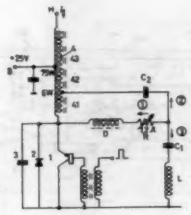


A cathode ray tube (magnetic deflection) display system provides pictorial (raster) and symbol (stroke) displays and includes an energy conservation circuit which uses the energy stored in the horizontal deflection coil of the cathode ray tube to achieve retrace of the sweep voltage used in providing the pictorial display.

3,751,707
SWEEP DEFLECTION LINEARIZATION CIRCUIT

Hermann Greiner, and Wolfgang Lerch, both of Darmstadt, Germany, assignors to Fernsch GmbH, Darmstadt, Germany

Filed Nov. 1, 1971, Ser. No. 194,430
Claims priority, application Germany, Oct. 31, 1970, P 20 53 51.1
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 7 Claims

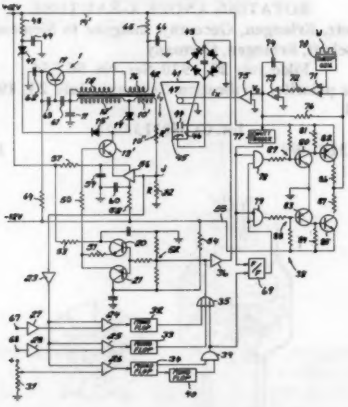


A transistor is switched on and off by pulses, successively completing a circuit through an autotransformer, and completing a series deflection circuit through a tapping of the autotransformer, a capacitance and an inductance. The capacitance is divided in two series-connected capacitors. A resonent oscillator circuit employs the transformer tapping, the adjacent capacitor, and a variable resistor and choke connected between a junction of the capacitors and a junction of the transformer and the transistor.

3,751,708
SWEEP CIRCUIT FOR OSCILLOSCOPE

Peter Harzer, Eningen, Germany, assignor to Wandel u Goltermann, Reutlingen, Germany

Filed May 14, 1971, Ser. No. 143,499
Claims priority, application Germany, May 14, 1970, P 20 23 548.7
Int. Cl. H01j 29/80
U.S. Cl. 315—22 16 Claims



The beam of a cathode-ray tube, normally suppressed, is electromagnetically deflected by a triangular current in the *x* direction and by a sinusoidal current of substantially higher frequency in the *y* direction, thereby producing an invisible grid on the oscilloscope screen. Whenever the *y*-deflection signal matches an input signal to be visualized, the beam is turned on for a small fraction of a *y*-sweep cycle during which the *y* sweep is interrupted whereby a short horizontal trace is produced on the screen. For tracing a horizontal base line in

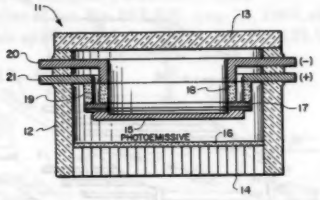
response to a given reference signal, the x sweep may be momentarily accelerated to the frequency of the y sweep which in this case is interrupted for a full cycle; this acceleration takes place on every n^{th} intersection of the y sweep with the imaginary base line.

3,751,709

INTERNAL TUBE PELTIER COOLING OF IMAGE INTENSIFICATION PHOTOCATHODES

Herbert L. Wilson, Woodbridge; Hans D. Pommerrenig, Springfield, and William A. Gutierrez, Woodbridge, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,313
Int. Cl. H01j 7/44
U.S. Cl. 315—50 **7 Claims**



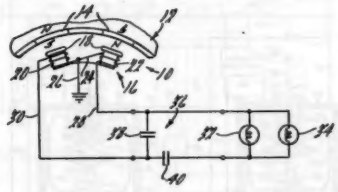
An intratube Peltier cooling device for cooling a photoemissive device mounted in a sealed housing of an image intensifier device. The cooler consists of at least a pair of N and P type material semiconductor elements having a centrally located cold junction element which surrounds the periphery of the photoemissive device. A hot junction is positioned adjacent the outer periphery of the semiconductor elements and extends through the sealed tube walls of the image intensifier device. Electrical connection is provided at the external periphery of the hot junction.

3,751,710

LIGHTING CIRCUIT SYSTEM

Thomas F. Carmichael, Drayton Plains; Richard J. Maier, Pontiac, both of Mich., and William J. Kirkpatrick, Bryan, Ohio, assignors to Syncro Corporation, Oxford, Mich.

Filed June 28, 1971, Ser. No. 157,329
Int. Cl. B60q 1/26
U.S. Cl. 315—79 **11 Claims**



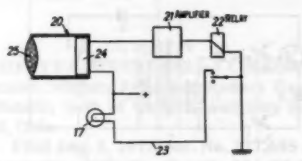
An electrical system for regulating the output potential to a lighting circuit for a vehicle from an existing electrical generating device driven by the engine of the vehicle whereby the potential to the lights will be sufficient to provide adequate lighting over the usable speed range of the engine.

3,751,711

LIGHTING DEVICE FOR ROAD VEHICLES

George-Robert Schick, Prilly, Switzerland, assignor to Schick & Cie, Prilly, Canton of Vaud, Switzerland

Filed Oct. 7, 1970, Ser. No. 78,856
Claims priority, application Switzerland, Oct. 9, 1969, 15181/69
Int. Cl. B60q 1/14
U.S. Cl. 315—83 **10 Claims**



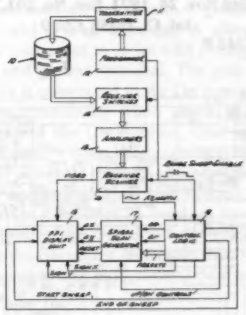
An automatically operated lighting device for road vehicles including headlights capable of being switched to a main beam position and to a dipped beam position, a cell including a light sensitive detectror for capturing light at the front of the vehicle and a control circuit, responsive to the detector, for operating the headlights so as to switch them from one position to the other when the intensity of the captured light passes a fixed limit. The headlights include a filter which reduces to a fraction the specific intensity of a predetermined wavelength range of the light emitted by a light source within the headlights. The sensitivity of the detector is a maximum in the range filtered by the filter.

3,751,712

DIGITAL DIFFERENTIAL ANALYZER SPIRAL SCAN GENERATOR

Gordon E. Murray, Santa Ana, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 29, 1970, Ser. No. 32,951
Int. Cl. H01j 29/70
U.S. Cl. 315—24 **16 Claims**

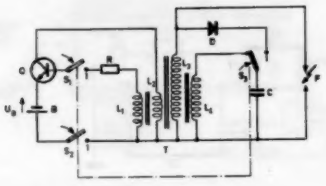


A spiral sweep generator for a rectangular Cartesian coordinate PPI display in a sonar system is disclosed using two cross-coupled DDA's to generate the sine and cosine values of sweep angle θ, and DDA's coupled to the sine and cosine DDA's to compute range rate values as increments Δx and Δy. The signs of the sine and cosine values are computed from the range rate increments as absolute values by counters in a PPI display unit. The signs of the sine and cosine are applied directly to the respective derivatives X and Y in the display unit where θ is zero for a heading-up display, i.e., for $X=0$; $Y=1$.

3,751,713
CIRCUIT ARRANGEMENT FOR PRODUCING A HIGH VOLTAGE SPARK

Peter Lohberg, Rodheim v.d.H., Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 23, 1971, Ser. No. 165,081
Claims priority, application Germany, July 27, 1970, P 20 37 068.7
Int. Cl. H05b
U.S. Cl. 315—209 T 2 Claims



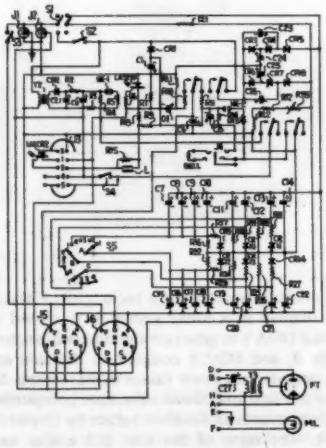
IGNITOR FOR USE WITH A LIGHTER

A circuit arrangement for producing a high voltage spark comprising a semi-conductor device and a transducer coupled therewith, a source of low power d.c. voltage coupled to the semi-conductor device for supplying power thereto, the transducer having a primary and a secondary circuit, a rectifier and a storage capacitor connected into the secondary circuit of the transducer, a sparkgap device connected in parallel with the secondary circuit of the transducer, a switching device having a plurality of switching positions, the transducer including an auxiliary winding connected in circuit relationship with the storage capacitor in one of the switching positions wherein the storage capacitor is charged to a voltage defined by the transformation ratio of the transducer, and in another position of the switching device the capacitor discharges the voltage thereon across a diode into the sparkgap device connected in parallel with the secondary circuit of the transducer, the transducer including a feedback coupled winding returned to an electrode of the semi-conductor device.

3,751,714
ELECTRONIC PHOTOFLASH UNIT

David O. Cooper, 2505 N. Quantico St., Arlington, Va.

Filed Nov. 24, 1971, Ser. No. 201,786
Int. Cl. H05b 37/00
U.S. Cl. 315—241 P 15 Claims

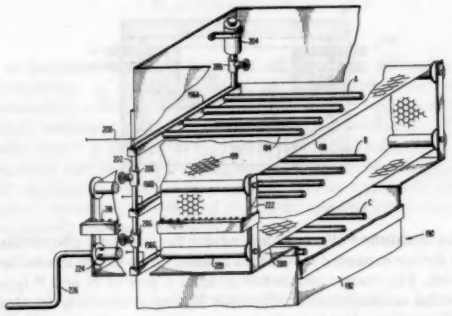


Controlled ionization of a photoflash tube by use of a light activated silicon controlled rectifier (LASCR) permits the operator to remain isolated from shock hazard. The LASCR is triggered by a neon lamp which is lit when a camera shutter switch is actuated. The shutter switch and lamp circuit are isolated from the AC line by a low power transformer and from the high voltage DC by the lamp-LASCR arrangement. A bank of capacitors discharges through the ionized photoflash tube and has its capacity rendered variable by a switch in which each switch position corresponds to a respective *f*-stop in the camera. Flash tube afterglow is eliminated by a relay circuit which prevents the capacitor bank from being recharged by the high voltage supply until the flash tube deionizes. Another relay circuit prevents operation of the flash tube prior to full charge of the capacitor bank.

3,751,715
IONIC WIND MACHINE

Harrison F. Edwards, 79 S. Broad St., Norwich, N.Y.

Filed July 24, 1972, Ser. No. 274,201
Int. Cl. H05h 5/06
U.S. Cl. 317—4 17 Claims

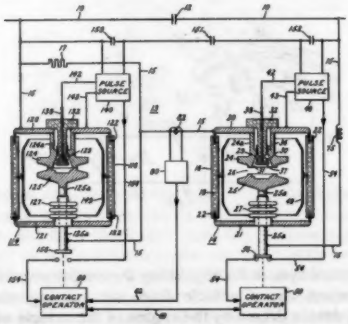


Disclosed is a wind generating machine with no moving parts. A thin corona wire is located adjacent a wire mesh and a potential gradient of from 7,000 to 20,000 volts causes air to flow in a direction from the wire toward the mesh. The air flow is voltage sensitive. Several stages may be provided and the mesh may form part of a continuous belt. A rigid self-contained assembly is provided by physically connecting the wire and mesh. In other forms, a dielectric coated wire or a liquid, for example, water, is utilized in lieu of the thin corona wire.

3,751,716
PROTECTIVE EQUIPMENT FOR A SERIES CAPACITOR

Ingolf B. Johnson, Schenectady, N.Y., and Graham R. Mitchell, Willingboro, N.J., assignors to General Electric Company, Philadelphia, Pa.

Filed Sept. 5, 1972, Ser. No. 286,469
Int. Cl. H02h 7/16
U.S. Cl. 317—12 A 10 Claims



Protective means for a series capacitor comprises a normally-open triggered vacuum interrupter that is triggered into

conduction to establish a bypass circuit shunting the capacitor in response to a condition producing an overvoltage across the capacitor. After the interrupter is so triggered, its contacts are driven into engagement to provide a solid metallic path for continued current flow through the bypass circuit. When the bypass circuit current subsides to a predetermined level, a resistor is inserted into the bypass circuit in series with the closed contacts of the interrupter, shortly after which said contacts are separated to interrupt the bypass circuit. Any restrike occurring in the vacuum interrupter during the latter interruption produces a low-current discharge through the series combination of the resistor and the interrupter that acts to clean up the contacts of the interrupter.

3,751,717

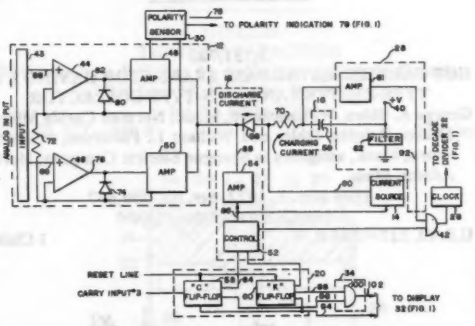
BIPOLAR FLOATING INPUT, PARTICULARLY FOR DIGITAL PANEL METERS

Joshua Horwitz; Barnard M. Gordon, both of Magnolia, and Brant W. Becker, Sudbury, all of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Continuation of Ser. No. 852,808, Aug. 25, 1969, abandoned. This application July 1, 1971, Ser. No. 158,990

Int. Cl. H02b *1/04*; **H05k** *5/02*

U.S. Cl. 317—99 **6 Claims**



In a bipolar floating input device, particularly for dual-slope integration digital panel meters, an analog voltage is applied to a bipolar floating input circuit and a digital form of the analog voltage is presented by a display.

3,751,718

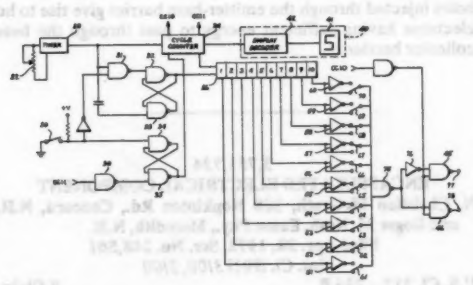
PROGRAMMABLE ELECTRIC LOCKING SYSTEM

Leland J. Hanchett, Jr., 3143 E. Malopai Dr., Phoenix, Ariz.

Filed Nov. 16, 1972, Ser. No. 307,120

Int. Cl. E05b *49/00*

U.S. Cl. 317—134 **7 Claims**



An electric locking system including an electrically operated door latch wherein the latch is energized by a signal derived from logic circuitry. The system is provided with a switch and a timing light; the initial closure of the switch activates the timing light for successive periods of time. During each of the successive periods of time, a memory register is enabled and activation of the switch during one of these periods of time will result in the storage of a binary one in the memory register. When the timing light has been energized and the memory register enabled a predetermined number of times, a logic gate is enabled and the contents of the memory register are applied to the gate; if the contents of the memory register coincide with a preselected binary code, an unlocked signal causes the energization of the electrical latch mechanism to thereby unlock the door.

3,751,719

HEAVY CURRENT RELAY CIRCUIT

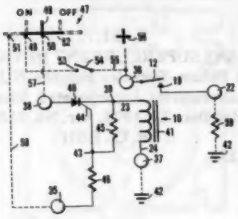
Mario Guarasci, Niagara Falls, and Rodney Hayden, Stoney Creek, Ontario, both of Canada, assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 3, 1972, Ser. No. 277,695

Claims priority, application Canada, May 24, 1973, 143246

Int. Cl. H01h *47/32*

U.S. Cl. 317—148.5 B **3 Claims**



The following disclosure describes a heavy current relay switch circuit device for an automobile having a high current load such as a rear window de-icing heater. The device is useful with a manual press type On-Neutral-Off control switch for the heated load, the switch having an On terminal, a Neutral terminal connected to the ignition and an Off terminal. The device has separate On and Off terminals connectable to the corresponding terminals of the switch, a ground terminal, a battery terminal and a load terminal. A silicon controlled rectifier device is connected in series with a relay coil between the Off terminal and ground terminal. The gate of the silicon controlled rectifier is connected to the On terminal so that the rectifier becomes conducting when gated by momentarily pressing the switch to the On position, thus to energize the relay coil. The normally open relay contacts are adapted to connect the battery directly to the load when the relay is energized. If for any reason, such as by vibration, the contacts separate the rectifier continues to conduct current from the ignition circuit through the Off terminal while the ignition is On thus restoring the circuit for the heater load which latter is, however, interrupted should the ignition be turned off.

3,751,720

RADIALLY ORIENTED MONOLITHIC CIRCUIT MASTERSLICE

William John Nestork, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

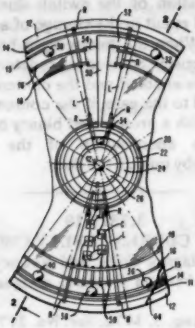
Filed Dec. 20, 1971, Ser. No. 209,846

Int. Cl. H01l *3/00*, *5/00*

U.S. Cl. 317—234 R **12 Claims**

A semiconductor integrated circuit masterslice comprising semiconductor substrate having a center of origin and arcuate or annular conductive lines thereon. A plurality of cell groups

are symmetrically located on the semiconductor substrate with respect to radial lines extending from the center of origin



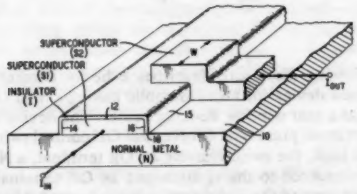
so as to significantly increase packing densities compared to that available with orthongonally or randomly disposed monolithic integrated circuit structures.

3,751,721

SNS SUPERCURRENT DEVICE

Theodore Alan Fulton, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 22, 1971, Ser. No. 210,841
Int. Cl. H01l
U.S. Cl. 317—234 **7 Claims**



An improved SNS supercurrent device comprises a pair of superconductive regions, a relatively thick insulative region contiguous with and separating the superconductive regions from one another, and a normal metal region contiguous with both superconductive regions. The insulative region is of sufficient thickness to prevent substantial supercurrent tunneling therethrough when a current source is connected between the superconductive regions. Consequently, current, following the path of least resistance, flows in a path including the normal metal region. The junction defined by the normal metal region has a significantly reduced cross-sectional area which in turn means the device has lower critical supercurrents and higher resistances than heretofore attainable in SNS structures.

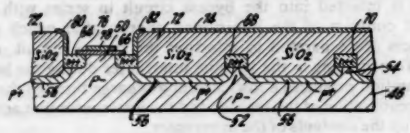
3,751,722

MOS INTEGRATED CIRCUIT WITH SUBSTRATE CONTAINING SELECTIVELY FORMED RESISTIVITY REGIONS

Paul Richman, St. James, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Apr. 30, 1971, Ser. No. 138,915
Int. Cl. H01l *19/00, 11/14*
U.S. Cl. 317—235 R **1 Claim**

An MOS integrated circuit including active devices and potential parasitic devices in which the threshold voltage at the active devices is relatively low, but is relatively high at the locations of the parasitic devices. One embodiment of the circuit includes a substrate and an epitaxial layer of the same polarity thereon, with the resistivity of the latter being significantly greater than that of the former. The high-resistivity epitaxial layer is present at the channel region of the active devices, but is not present at the locations of the parasitic



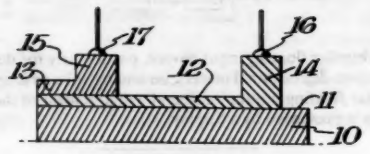
devices. In a second embodiment of the invention, the circuit includes a substrate of high resistivity and selectively diffused regions with doping concentration significantly greater than in the substrate. The active devices are formed in the high resistivity regions and the parasitic devices are formed in the selectively diffused regions.

3,751,723

HOT CARRIER METAL BASE TRANSISTOR HAVING A P-TYPE EMITTER AND AN N-TYPE COLLECTOR

George A. Shirn, Williamstown, Mass.; Norman Carlile Miller, Shaker Heights, Ohio, and William L. Patterson, Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 1, 1972, Ser. No. 230,597
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **1 Claim**



A p-type material comprising the emitter region of a metal base hot carrier transistor with n-type material comprising the collector to provide a p-metal-n hot carrier transistor. Hot holes injected through the emitter-base barrier give rise to hot electrons having sufficient energy to pass through the base-collector barrier.

3,751,724

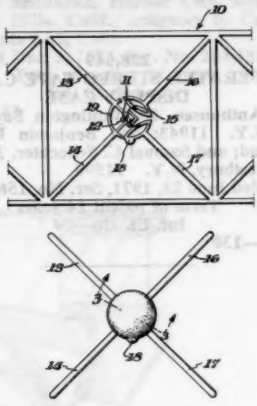
ENCAPSULATED ELECTRICAL COMPONENT

N. Christian McGrath, 168 Hopkinton Rd., Concord, N.H., and Roger M. Nash, Eaton Pky., Meredith, N.H.

Filed Apr. 28, 1972, Ser. No. 248,501
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **7 Claims**

The lead frame of an electrical component has a generally circular and substantially continuous portion thereon that is indexed under a dispenser to receive a pre-metered drop of an encapsulant. The encapsulant viscosity and surface tension

are such that it flows around and under this circular portion forming a protective mass therearound that is retained in



place prior to being cured. The retained droplet thereby forms the final package shape and outline for the electrical component.

3,751,725

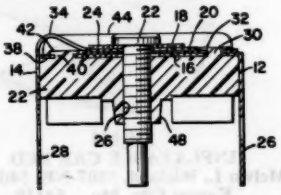
TRIMMER CAPACITOR

Steven Stavrou, P.O. Box 39, Collingwood, Ontario, Canada

Filed June 28, 1972, Ser. No. 267,242

Int. Cl. H01g 5/16

U.S. Cl. 317—249 R **2 Claims**



A trimmer capacitor utilizes a molded plastic base having integral projections which extend through openings in conductive plates, and which are heated to form expanded portions holding the conductive plates in place against the base. Integral ridges extend outwardly from the face of the base to form alignment guides which facilitate assembly. A self-tapping adjustment screw is threaded directly into the molded plastic base.

3,751,726

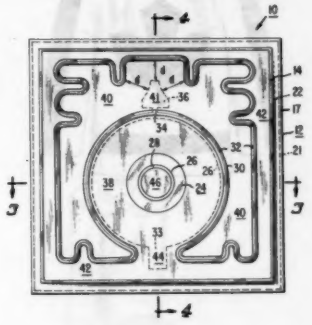
SEMICONDUCTOR DEVICE EMPLOYING DARLINGTON CIRCUIT

Willem Gerard Einthoven, Belle Mead, and Carl Franklin Wheatley, Jr., Somerset, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 199,880

Int. Cl. H01l 19/00

U.S. Cl. 317—235 R **9 Claims**



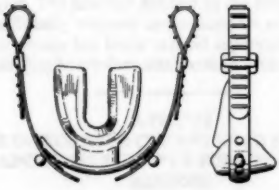
A device employs two emitters in a common base region having a base-collector junction which only intersects a mesa edge of the device. A distributed resistance is defined between a base contact and a conductive layer substantially uniformly overlapping the outer periphery of one of the emitters which completely surrounds the base contact.

DESIGNS

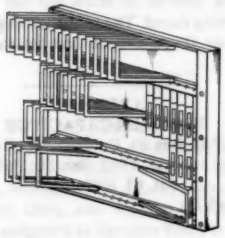
AUGUST 7, 1973

228,047
JERSEY
Andrew J. N. Alexander, Port Credit, Ontario, Canada, assignor to Maple Leaf Gardens Limited, Toronto, Ontario, Canada
Filed Apr. 8, 1971, Ser. No. 132,629
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—46

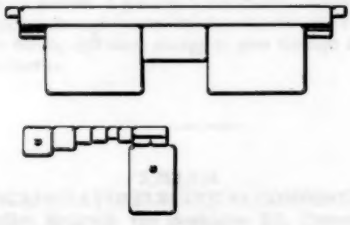
228,048
PROTECTIVE MOUTHPIECE
Glenn O. Miller, Tonawanda, N.Y., assignor to Shield Mfg., Inc., Buffalo, N.Y.
Original design application Feb. 9, 1970, Ser. No. 21,322. Divided and this application Mar. 1, 1971, Ser. No. 120,007
Term of patent 14 years
Int. Cl. D2—*03*; D24—*99*
U.S. Cl. D2—233



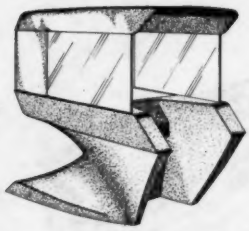
228,049
LOCK OPERATED STEREO TAPE CARTRIDGE DISPLAY CASE
Arthur G. Anthonsen, 83 Huntington Bay Road, Huntington, N.Y. 11943; and Benjamin Rubenstein, 10 Cedar Road; and Samuel C. Schechter, 3 Orient Court, both of Westbury, N.Y. 11590
Filed June 23, 1971, Ser. No. 156,164
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130

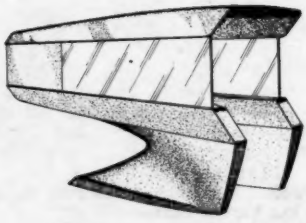


228,050
INFLATABLE CAR BED
Melvin L. Wieland, 3507 NE. 54th St., Kansas City, Mo. 64119
Filed July 8, 1971, Ser. No. 160,981
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—201



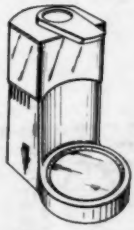
228,051
STUDY CARREL
Calvin Masaru Shimaoka, Harbor City, and Anton A. Sixt, Laguna Hills, Calif., assignors to Carter Industries, Inc., Santa Ana, Calif.
Filed Dec. 3, 1971, Ser. No. 204,785
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181





228,052
NEWSPAPER HOLDING AND BUNDLING DEVICE
William E. Howard, West Hartford, Conn., assignor to Materials Handling Systems, Inc., West Hartford, Conn.
Filed Aug. 18, 1971, Ser. No. 172,955
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184

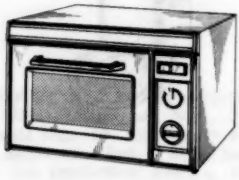
228,053
COFFEEMAKER
John E. Knox, Affenthal, near Baden-Baden, and Gerhard Hubner, Baden-Baden, Germany, assignors to Wigo-Gottlob Widmann & Sohne KG
Filed June 21, 1971, Ser. No. 155,384
Claims priority, application Germany May 5, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—63



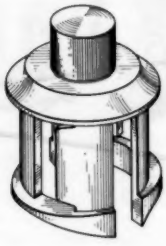
228,054
NUTCRACKER
Carl R. Craft, Kempner, Tex. 76539
Filed July 10, 1972, Ser. No. 270,090
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—98

228,055
BUTTER SPREADER
Joseph T. Eisenhoffer, 5418 Devonshire, St. Louis, Mo. 63109
Filed Dec. 8, 1971, Ser. No. 206,242
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—99

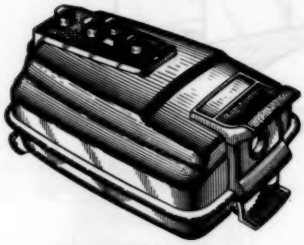
228,056
MICROWAVE OVEN
Akiyoshi Koshiro and Koshiaki Kawata, Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 18, 1971, Ser. No. 190,428
Claims priority, application Japan Apr. 19, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



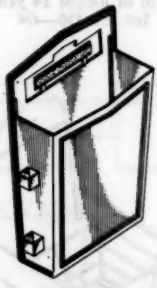
228,057
VALVE FOR COOKING UTENSIL LID
Frank E. Stepanek, Lagrange Park, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Dec. 13, 1971, Ser. No. 207,720
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—129



228,058
SUCTION CLEANER
Samuel E. Hohulin, Lexington, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.
Filed Nov. 15, 1971, Ser. No. 199,082
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—168



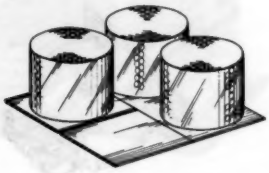
228,059
LITTER BOX
Cecil B. Woofter, Newton, Iowa, assignor to The Vernon Company
Filed Aug. 31, 1971, Ser. No. 176,794
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—193



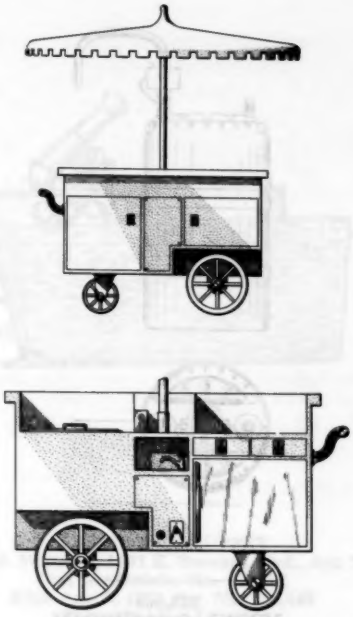
228,060
COMBINED DOOR HANDLE AND LOCK HOUSING SET
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Original design application June 1, 1970, Ser. No. 23,211. Divided and this application June 30, 1971, Ser. No. 158,498
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—138

228,061
DOOR LOCK ESCUTCHEON
Henry Kartarik, White Bear Lake, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.
Filed Aug. 30, 1971, Ser. No. 176,448
Term of patent 14 years
Int. Cl. D8
U.S. Cl. D8—179

228,062
PACKAGING CUSHION OR THE LIKE
William R. Armstrong, Fair Lawn, N.J., assignor to Sealed Air Corporation, Fair Lawn, N.J.
Filed Feb. 17, 1971, Ser. No. 116,301
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294

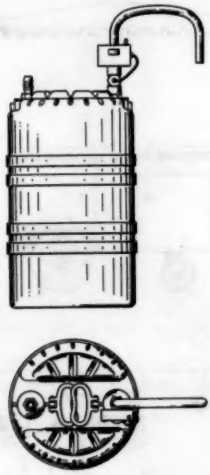


228,063
FOOD CART
Ira A. Keeshin and Ronald J. Kruse, Cincinnati, Ohio, assignors to Federated Department Stores, Inc., Cincinnati, Ohio
Filed July 28, 1971, Ser. No. 167,088
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3 M

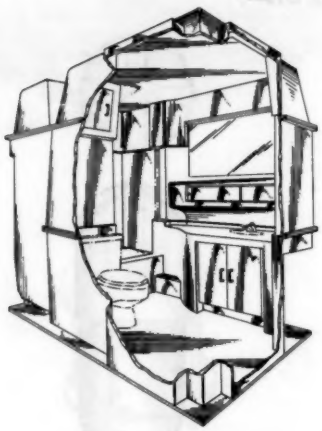


228,064
CAPSULE
Kenneth N. Larsen, Southfield, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
Filed Aug. 26, 1971, Ser. No. 175,420
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D16—3

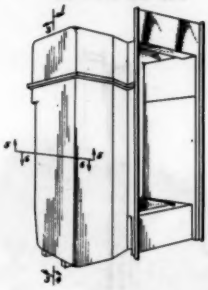
228,065
WATER CONDITIONER
Daniel B. Comroe, St. Paul, Minn., assignor to Ecodyne Corporation
Filed June 4, 1971, Ser. No. 143,712
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



228,066
MODULAR BATHROOM
Edmund F. Humphries, Jr., Tulls Creek Road, Moyock, N.C. 27958
Filed May 14, 1971, Ser. No. 143,717
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49

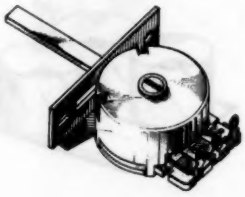


228,067
COMBINED BATHTUB AND SHOWER UNIT
Edmund F. Humphries, Jr., Tulls Creek Road, Moyock, N.C. 27958
Filed May 21, 1971, Ser. No. 146,002
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49

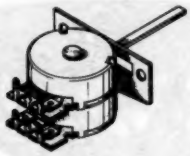


228,068
BLOWER
Anthony C. Laraia, Torrington, and Jan Najman, Terryville, Conn., assignors to Torin Corporation, Torrington, Conn.
Filed Sept. 20, 1971, Ser. No. 182,306
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—74

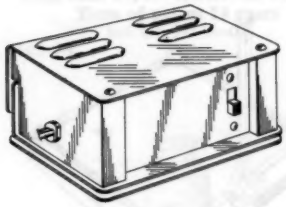
228,069
VARIABLE RESISTOR
Shunzo Oka, Hirakata, and Akitoshi Miyashita, Suita, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed July 2, 1971, Ser. No. 159,585
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 D

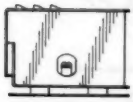


228,070
DUPLEX VARIABLE RESISTOR
Shunzo Oka, Hirakata, and Akitoshi Miyashita, Suita, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed July 2, 1971, Ser. No. 159,587
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 D



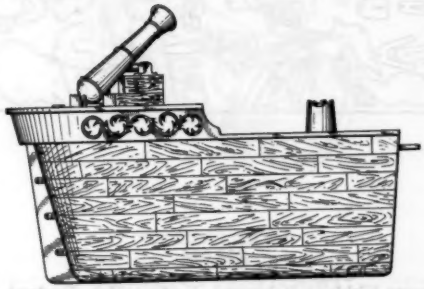
228,071
BATTERY CHARGER
Daniel A. Berkoff, Sherman Oaks, Calif., assignor to Orian Industries, Inc.
Filed Nov. 12, 1971, Ser. No. 198,501
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 B





228,072
POULTRY CAGE
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed Mar. 5, 1971, Ser. No. 121,629
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

228,073
FILTER FOR HOME AQUARIUM
David D. Lovitz, Short Hills, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.
Filed Nov. 19, 1971, Ser. No. 200,648
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—9



228,074
TOY FINGER PUPPET
David S. Matteson, 1501 E. Broward Blvd., Apt. 704, Fort Lauderdale, Fla. 33301
Filed Aug. 6, 1971, Ser. No. 122,649
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

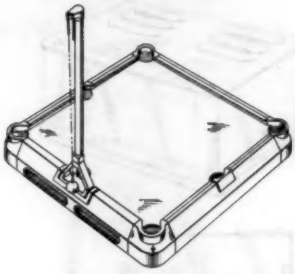
228,075
ANIMAL FIGURE PUNCH-OUT BOARD OR SIMILAR ARTICLE
Harry Zelenko, 150 E. 61st St., New York, N.Y. 10021
Term of patent 3½ years
Filed May 6, 1971, Ser. No. 141,097
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

228,076
GAMES BOARD FOR A GAME
Thomas Kirkland Robertson, Bosham Hoe, England, assignor to Premium Publications Limited, London, England
Filed Aug. 26, 1971, Ser. No. 175,421
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 TT

228,077
TOY COMFORTER OR THE LIKE
Norma E. MacKenzie, 425 Sussex Drive, Ottawa, Ontario, Canada
Filed Oct. 15, 1971, Ser. No. 189,810
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

228,078
HANGING BASKET
Russel Garnet Myles, 1770B Albion Road, Rexdale, Ontario, Canada
Continuation-in-part of abandoned design application Ser. No. 26,696, Dec. 29, 1970. This application Oct. 8, 1971, Ser. No. 187,939
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 C

228,079
TETHERED BALL GAME BOARD
Donald Huffman, Montreal, Quebec, Canada, assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Sept. 9, 1971, Ser. No. 179,265
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BB



228,080
BOWLING BALL RACK
Thomas Kelly Ferguson, Eminence, Ky., assignor to The Brunswick Corporation
Filed Apr. 27, 1971, Ser. No. 138,014
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 DD

228,081
BALANCING BIRD TOY
Alexander L. Baksai, 11125 Runnymede, Sun Valley, Calif. 91352
Filed Nov. 22, 1971, Ser. No. 201,264
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 N

228,082
FRICTION GRIP FASTENER FOR ARTICLES OF JEWELRY
John Bertil Waller, Barrington, R.I., assignor to A. E. Waller Company, Inc., Providence, R.I.
Filed June 16, 1971, Ser. No. 153,928
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—9

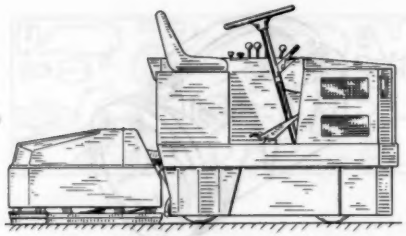
228,083
COMBINED MEMO PAD HOLDER, WRITING INSTRUMENT AND HOLDER THEREFOR
Roland Longarzo, Valley Stream, N.Y., assignor to Consolidated Foods Corporation, Chicago, Ill.
Filed Dec. 2, 1971, Ser. No. 204,398
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D45—9 A

228,084
UNDERWATER LIGHT
Allan Thomas Beer, Redwood City, Calif., assignor to Darrell-Allan Corporation, Belmont, Calif.
Filed Jan. 17, 1972, Ser. No. 218,654
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R

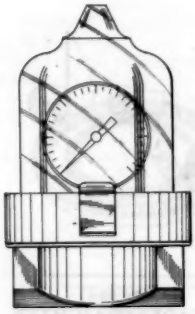
228,085
PHYSICIAN'S SPOTLIGHT
Michael N. Foster, 1409 Ruth Ave., Arlington, Tex. 76010
Filed Dec. 10, 1970, Ser. No. 26,398
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—20 H

228,086
CIGARETTE LIGHTER
Sadao Yoshinaga, Tokyo, Japan, assignor to Yoshinaga Prince Co., Ltd., Tokyo, Japan
Filed Sept. 11, 1972, Ser. No. 287,691
Claims priority, application Germany, Apr. 27, 1972
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

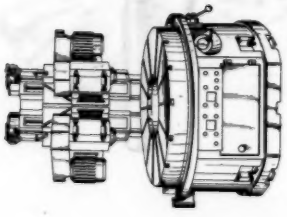
228,087
SCRUBBING MACHINE
Joseph G. Kasper, Minneapolis, and John N. Polivka, Hopkins, Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed June 28, 1971, Ser. No. 157,784
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—9.1



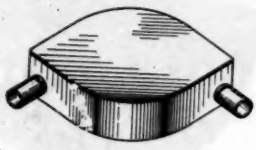
228,088
DIFFERENTIAL PRESSURE GAUGE
John Vander Horst, Lakewood, Colo., assignor to Wilkerson Corporation, Englewood, Colo.
Filed June 21, 1971, Ser. No. 155,395
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



228,089
ROTARY TABLE-TYPE MILLING MACHINE
Sadayoshi Sakurai, 830 Sukenobu-cho, Hamamatsu, Japan
Filed Oct. 15, 1971, Ser. No. 189,799
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D54—14 A

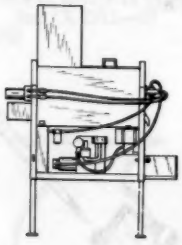


228,090
FEED IDLER CORNER
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed July 6, 1971, Ser. No. 160,262
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 C



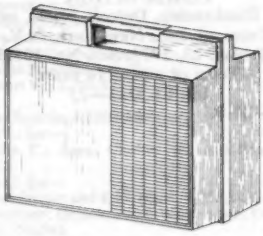
228,091
KNOCKDOWN POTTER'S WHEEL
Paul E. Soldner, P.O. Box 90, Aspen, Colo. 81611
Filed Aug. 9, 1971, Ser. No. 170,400
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D55—1 R

228,092
ASPHALT MILL
Sylvan G. Stepp, North Branch, Minn. 55056
Filed Dec. 17, 1971, Ser. No. 209,506
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 R

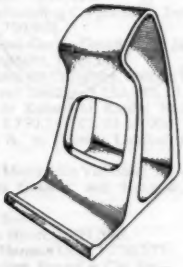


228,093
CONTACT LENS CASE
Robert E. Middleton, Englewood, and Gary L. Switser, Boulder, Colo., assignors to R & F Products, Inc., Englewood, Colo.
Filed July 30, 1971, Ser. No. 167,887
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 B

228,094
COMBINED MOTION PICTURE PROJECTOR AND CARRYING CASE OR SIMILAR ARTICLE
Robert E. Bourke, Weston, Conn., assignor to GAF Corporation, New York, N.Y.
Filed Nov. 1, 1971, Ser. No. 194,784
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 K



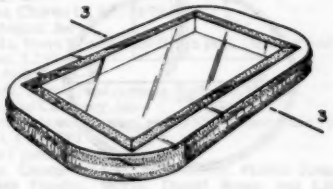
228,095
COMBINED BODY REST AND FOOT SUPPORT UNIT
Fred A. Schmitt, Nutley, N.J., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Sept. 2, 1970, Ser. No. 24,815
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—64



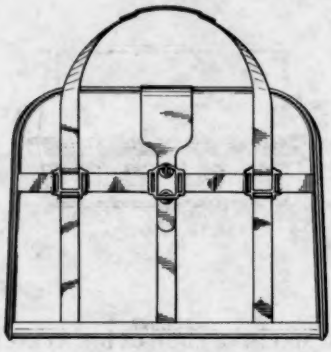
228,096
BULK MATERIALS CAR BODY
Jack Hickman, 5766 Fair Oaks Blvd., Carmichael, Calif. 95608
Filed Mar. 1, 1971, Ser. No. 119,994
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D66—1

228,097
SEWING MACHINE EDGE GUIDE ATTACHMENT
Lawrence M. Dunne, Massapequa Park, N.Y., assignor to The Singer Company, New York, N.Y.
Filed Nov. 23, 1971, Ser. No. 201,610
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—2 B

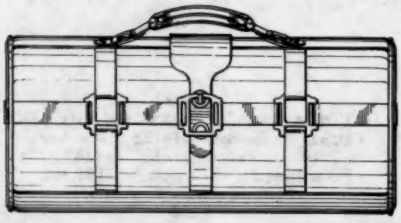
228,098
LID FOR A BASKET PURSE OR THE LIKE
Patricia A. Simmons, 16125 Mack Ave., Grosse Pointe, Mich. 48224
Filed June 21, 1971, Ser. No. 155,396
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F

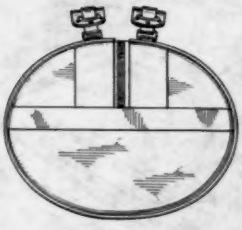


228,099
LUGGAGE BAG
Leslie Marshall, 15 Pine St., Woodmere, N.Y. 11598
Original design application Jan. 28, 1971, Ser. No. 21,123, now Patent No. 221,318, dated July 27, 1971. Divided and this application July 15, 1971, Ser. No. 163,116
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G

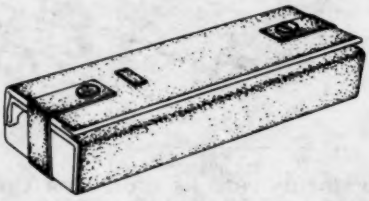


228,100
LUGGAGE BAG
Leslie Marshall, 15 Pine St., Woodmere, N.Y. 11598
Original design application Jan. 28, 1970, Ser. No. 21,123, now Patent No. 221,318, dated July 27, 1971. Divided and this application July 16, 1971, Ser. No. 163,564
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G

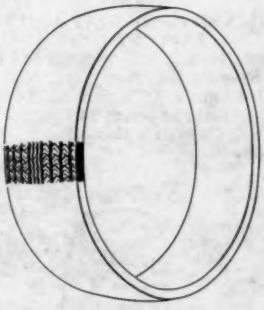




228,101
CARRYING CASE FOR A FLAT FOLDED UMBRELLA
Hans Hoffmann, Essen, Germany, assignor to Telesco Brophey Limited, Quebec, Canada
Filed Feb. 18, 1972, Ser. No. 227,697
Claims priority, application Germany Aug. 20, 1971
Term of patent 14 years
Int. Cl. D3—*07*
U.S. Cl. D87—1 R



228,102
PNEUMATIC TIRE TREAD AND BUTTRESS COMBINATION
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Nov. 23, 1971, Ser. No. 201,630
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 7TH DAY OF AUGUST, 1973

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Dane, Ivo; Fromandi, Guido; Blankenstein, Paul; Muller, Erwin; Freytag, Helmut; and Wother, Wolfgang, 3,751,331.
Haubtmann, Henri, 3,750,326.
Hermann, Karl Heinz, 3,751,394.
Schliebs, Reinhard; and Jonas, Gerhard, 3,751,460.
Schwerdtel, Wolf; Swodenk, Wolfgang; and Woernle, Peter, 3,751,497.

Beach, David E., to Eastman Kodak Company. Film metering device for roll film cameras. 3,750,545, Cl. 95-31.0fm.

Bealle, John; and Cash, John H., Jr., to Texas Instruments Incorporated. Method of making glass bonded recording heads. 3,750,274, Cl. 29-603.000.

Bean, Stephen F., to Autech, Corporation. Distance mode area navigation computer. 3,750,942, Cl. 235-150.270.

Bear Creek Mining Company: *See—*
Walthier, Thomas N.; Rosefelder, Andre Marcel; and Schatz, Clifford E., 3,750,547.

Beauregard, Louis, to Techno-Components Corporation. Automatic degating apparatus. 3,750,346, Cl. 51-134.000.

Beck, Erich: *See—*
Patels, Gottfried; and Beck, Erich, 3,751,589.

Becker, Brant W.: *See—*
Horwitz, Joshua; Gordon, Bernard M.; and Becker, Brant W., 3,751,717.

Becker, Gene J. Loader bucket with positive endward ejector. 3,750,816, Cl. 214-767.000.

Becker, H. Jack: *See—*
Taylor, Marvin A.; Johnson, Glenn H.; and Becker, H. Jack, 3,751,111.

Becker, Harold D., to Datel Corporation. Operational input control mechanism. 3,750,793, Cl. 197-19.000.

Becker, Wilhelm, to Reichhold-Albert-Chemie Aktiengesellschaft. N-hydroxybenzyl-d,d X Y lene-diamines. 3,751,471, Cl. 260-570.500.

Beckers, Norman L., to Diamond Shamrock Corporation. Purification of chlorinated hydrocarbons employing molecular sieves. 3,751,494, Cl. 260-654.00s.

Beckman Instruments, Inc.: *See—*
Michelson, Robin P., 3,751,605.

Becton, Dickinson and Company: *See—*
Bennett, Michael C.; and Mattaliano, John A., 3,750,645.
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Beddows, Norman Anthony, to General Electric Company. Method of making flexible loop, hard slot coils for dynamoelectric machine windings. 3,750,273, Cl. 29-596.000.

Bede, James R. Aircraft pants structure. 3,750,986, Cl. 244-103.00r.

Bednarz, Othneil A. Ignition distributor. 3,751,610, Cl. 200-19.00r.

Beer, Henri Bernard, to Chemnor Aktiengesellschaft. Electrode and coating therefor. 3,751,296, Cl. 117-230.000.

Beery, Jack; and Luo, Zong S., to Burroughs Corporation. Conical spring. 3,751,025, Cl. 267-166.000.

Behr, Raymond Douglas: *See—*
Alfrey, Turner, Jr.; Behr, Raymond Douglas; and Chisholm, Douglas Stewart, 3,751,288.

Beier, Hans Peter: *See—*
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Belanger, Edouard: *See—*
Belanger, Regis; and Belanger, Edouard, 3,750,486.

Belanger, Regis; and Belanger, Edouard. Safety device for neutralizing the clutch of a snowmobile. 3,750,486, Cl. 74-230.17e.

Belart, Juan: *See—*
Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan, 3,750,857.

Belgonucleaire, S.A.: *See—*
Flipot, Alfred Jean; and Gilissen, Robert E. M., 3,751,538.

Belk, Samuel A.: *See—*
Vdoviak, John W.; Belk, Samuel A.; and Weinstein, Barry, 3,750,402.

Belke, Jack T.: *See—*
Claflin, Hyle K.; and Belke, Jack T., 3,751,067.

Belke, William H.; Phelps, Eldon L.; Streight, William E.; and Untz, Robert W., to Caterpillar Tractor Company. Floating thickness monitor. 3,750,294, Cl. 33-147.001.

Belkin, Giora. Container having a time controlled locking mechanism. 3,750,435, Cl. 70-272.000.

Bell & Howell Company: *See—*
Mueller, Arthur C., 3,751,149.

Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Protection circuit for electrical discharge machining power supply apparatus. 3,751,622, Cl. 219-69.00s.

Bell Telephone Laboratories, Incorporated: *See—*

Bonyhard, Peter Istvan, 3,751,597.
Breeden, Robert Louis, 3,751,602.
Cho, Alfred Yi, 3,751,310.
Derick, Lincoln; Jordan, Andrew Stephen; and Verleur, Hans Willem, 3,751,309.
Fulton, Theodore Alan, 3,751,721.
Goell, James Emanuel, 3,751,248.
Kaiser, Charles William, Jr., 3,751,606.
Rankel, Lillian Ann, 3,751,314.
Reichard, George Willis, Jr., 3,751,600.
Theuerer, Henry C.; and Turner, Paul A., 3,751,293.

Bellati, Hans; Huber, Hans; and Rutti, Willi, to Aktiengesellschaft Brown, Boveri & Cie. Auxiliary bearing for mounting a turbine shaft. 3,751,119, Cl. 308-9.000.

Beller, Hans Albert: *See—*
Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan, 3,750,857.

Belling, William F. Wire stripping tool. 3,750,281, Cl. 30-90.800.

Bellington, Larry D. Shotgun shell wad. 3,750,579, Cl. 102-95.000.

Bellos, Thomas J., to Petrolite Corporation. Method of protecting metal surfaces against abrasive wear in pumps with polyquaternaries. 3,751,364, Cl. 252-49.300.

Bemis Company, Inc.: *See—*
Goodwin, Ralph C., 3,750,937.

Bender, Newell R.; and Spacht, Ronald B., to Goodyear Tire & Rubber Company, The. Stabilization of polyurethane compositions and resins used to prepare polyurethane compositions. 3,751,375, Cl. 260-2.5bb.

Bender, Peter: *See—*
Heede, Konrad; and Bender, Peter, 3,750,575.

Bendix Corporation, The: *See—*
Forrest, Robert B., 3,750,293.
Owens, Abner, Jr.; and Weinstein, Donald, 3,751,706.

Benedetti, Napoleone. Device for automatically hooking a fish. 3,750,320, Cl. 43-15.000.

Benjamin, Paul M. Centrifugal thrust motor. 3,750,484, Cl. 74-84.500.

Benko, Pal; Budai, Zoltan; Pallos, Laszlo; and Berenyi, Edit, to Egyt Gyogyszervegyeszeti Gyar. Trichloroethylidene-amino-thiazoles. 3,751,423, Cl. 260-306.80r.

Bennes Marrel, Saint-Etienne (Loire): *See—*
Bore, Raymond, 3,750,699.

Bennett, John Theodore George; and Read, John Anthony, to Kollsman Instrument Limited. Altimeters. 3,750,473, Cl. 73-387.000.

Bennett, Michael C.; and Mattaliano, John A., to Becton, Dickinson and Company. Method of collecting blood and separating cellular components thereof. 3,750,645, Cl. 128-2.00g.

Berecz, Imre, to Kaynar Mfg. Co., Inc. Systematized apparatus for driving fasteners. 3,750,257, Cl. 29-212.00r.

Berenyi, Edit: *See—*
Benko, Pal; Budai, Zoltan; Pallos, Laszlo; and Berenyi, Edit, 3,751,423.

Beresic, John L Hat-mounted container for accessories. 3,750,192, Cl. 2-185.00r.

Berg, Lawrence D.: *See—*
Solem, Richard H.; and Berg, Lawrence D., 3,751,444.

Berger, Julius; Pruess, David; and Scannell, James Parnell, to Hoffmann-La Roche Inc. L-trans-2-amino-4-2-aminoethoxy)-3-butenoic acid. 3,751,459, Cl. 260-534.00m.

Bergeson, Richard P., to Maytag Company, The. Adjustable appliance support. 3,750,989, Cl. 248-23.000.

Bergholtz, Niels Rudolf. Method for treating textile material with a liquid. 3,751,223, Cl. 8-155.100.

Bergling, Folke Gunnar: *See—*
Hanson, Carl George; and Bergling, Folke Gunnar, 3,751,124.

Bergmeyer, Hans Ulrich; Michael, Gerhard; Nelboeck-Hochstetter, Michael; Stork, Harald; and Weimann, Gunter, to Boehringer Mannheim GmbH. Imidazole-ribosyl cyclophosphate compounds and therapeutic compositions. 3,751,408, Cl. 260-211.50r.

Bergomi, Angelo, to Goodyear Tire & Rubber Company, The. Hydrodealkylation process. 3,751,505, Cl. 260-672.00r.

Berk, William E., Jr.: *See—*
Reft, Allen B.; and Berk, William E., Jr., 3,750,622.

Berkovitz, Harry, to Westinghouse Electric Corporation. Duplex counterweightless shuttle elevator system. 3,750,849, Cl. 187-16.000.

Berlin, Milton; and Rheingold, Lawrence M., to Templet Industries, Inc. Optical device. 3,751,140, Cl. 350-305.000.

Berman, Elliot; and Ekman, Carl F., to Itek Corporation. Photographic image transfer apparatus. 3,751,161, Cl. 355-27.000.

Bernard, George G., to Union Oil Company of California. Method of placing a well on production. 3,750,753, Cl. 166-309.000.

Bernardi Brothers, Inc.: *See—*
Bernardi, Robert P.; and Bernardi, Donald A., 3,750,212.

Bernardi, Donald A.: *See—*
Bernardi, Robert P.; and Bernardi, Donald A., 3,750,212.

Bernardi, Robert P.; and Bernardi, Donald A., to Bernardi Brothers, Inc. Vehicle washing installation. 3,750,212, Cl. 15-21.00d.

Bernstein, Jerome; and Weissman, Walter, to Esso Research and Engineering Company. Process for preparing jet fuel. 3,751,360, Cl. 208-61.000.

Berry, David A.; and Byan, Gilbert M., to Dart Industries Inc. Disubstituted cyclohexane polymer compositions. 3,751,374, Cl. 260-17.400.

Bertelli, Giuseppe, to S.E.B.A.C. S.p.A. Motorcycle suspension device. 3,751,022, Cl. 267-60.000.

Bethea, Thomas J.; Dixon, Charles R.; Hargett, Wyatt P., Jr.; and Stokes, William H., to Celanese Corporation. Aspirator. 3,750,922, Cl. 226-97.000.

Bethlehem Steel Corporation: *See—*
Bare, Conrad B.; and Pasquali, Joseph W., 3,751,554.
Sloughfy, James L.; and Fegan, Lloyd V., Jr., 3,751,241.

Bettin, Hubertus, to Olympia Werke AG. Apparatus for producing an imprint electrostatic capillary. 3,750,564, Cl. 101-1.000.

Betts, Robert E.; and Williams, Nathan P., to United States of America, Army. Missile motor igniter assembly. 3,750,581, Cl. 102-49.700.

Betz Laboratories, Inc.: *See—*
Lieberman, Hillel; and Graffeo, Anthony J., 3,751,373.

Beyer, James N.; Moore, Earl P., Jr.; and Rusher, Robert L., to Du Pont de Nemours, E. I., and Company. Refractory laminate based on negative sol or silicate and positive sol. 3,751,276, Cl. 106-38.300.

Beyerle, Rudi: *See—*
Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,751,413.

Beyleveld, Wilhelmus M.: *See—*
Oxenrider, Bryce C.; Woolf, Cyril; and Beyleveld, Wilhelmus M., 3,751,469.

Biddick, Royce E.; and Ockerman, John B., to United States of America, Army. Stabilization of boron phosphate sulfuric acid gels. 3,751,304, Cl. 136-158.000.

Biddy, Basil Glover: *See—*
Mundorff, Sheila Ann; Biddy, Basil Glover; and Shrestha, Buddhi Man, 3,751,568.

Biel, John H.: *See—*
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., 3,751,390.

Bieschke, Hillard J., to Knox Manufacturing Company. Mounting device for projection screen. 3,750,994, Cl. 248-324.000.

Billings, Roy O. Hydraulic actuators for orienting implements on cranes. 3,751,099, Cl. 294-88.000.

Binger, Wayne W.; Zelly, Walter O.; Hoch, Fred R.; and Dickerson, Paul B., to Aluminum Company of America. Resistance welding of aluminum. 3,751,626, Cl. 219-119.000.

Bingham, Samuel, Company: *See—*
Brown, James K., 3,750,250.

Binsergen, Frederik L.: *See—*
Van Der Ven, Servaas; and Binsergen, Frederik L., 3,751,435.

Bio-Consultants, Inc.: *See—*
Drucker, Robert M., 3,750,941.

Bishop, Harold F.; and Deck, James R., to Exomet, Incorporated. Flexible exothermic mat and method of use. 3,751,308, Cl. 148-127.000.

Bishop, William Dennis, to Plessey Handel und Investments A.G. Magnetic reed contact unit producing apparatus. 3,750,276, Cl. 29-622.000.

Bissett-Berman Corporation, The: *See—*
Brown, Neil L., 3,750,476.

Bittner, Herbert, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method of continuous production of tubing with helical or annular ribs. 3,750,444, Cl. 72-78.000.

Bixler, Warren A.: *See—*
Miller, Wesley W.; Litschi, Gerold; and Bixler, Warren A., 3,751,164.

Black, David V. C., Jr.; Pospisil, Richard E.; and Powell, George A., to Telecommunication Technology, Inc. Modular instrument housing. 3,751,127, Cl. 312-111.000.

Blackwelder, Maurice W.: *See—*
Scotto, Victor Edward; and Blackwelder, Maurice W., 3,751,537.

Blair, George R.; and Keller, Sherman R., to Hughes Aircraft Company. Method of deoxidizing stainless steel and electropolishing of molybdenum. 3,751,352, Cl. 204-145.00r.

Blajda, Raymond S., to United States of America, Army. Expellable cartridge case. 3,750,578, Cl. 102-38.000.

Blakemore, John H. Infinitely variable positive mechanical transmission. 3,750,485, Cl. 74-125.500.

Blankenstein, Paul: *See—*
Dane, Ivo; Fromandi, Guido; Blankenstein, Paul; Muller, Erwin; Freytag, Helmut; and Wother, Wolfgang, 3,751,331.

Blau K.G. Fabrik fuer Kraftfahrzeughteile: *See—*
Gerdes, Theo, 3,750,434.

Bloom, Jerome E. Valve device for dental prosthesis. 3,750,287, Cl. 32-3.000.

Bloom, Stanley M., to Polaroid Corporation. Azo compounds useful in photographic processes. 3,751,406, Cl. 260-162.000.

Blouin, Louis, to Compteurs Schlumberger. Remote control receiver. 3,751,592, Cl. 178-88.000.

Blum, Eduard, to Blum-Bau KG. Facade composite panel element. 3,750,355, Cl. 52-309.000.

Blum-Bau KG: *See—*
Blum, Eduard, 3,750,355.

Blumenthal, Jack L.; Carroll, David F.; and Ogren, John R., to United States of America, Atomic Energy Commission. Plasma arc sprayed modified alumina high emittance coatings for noble metals. 3,751,295, Cl. 117-227.000.

Blumer, Armin, to Maschinenfabrik und Giesserei Netstal AG. Hydraulic control device for injection molding machine. 3,750,705, Cl. 137-625.640.

Bobard, Emile, to Gilbert, Nathan. Straddle tractor including an improved tractor frame. 3,750,773, Cl. 180-1.00f.

Bobb, Paul D., to Armstrong Cork Company. Chair pack. 3,750,872, Cl. 206-46.00s.

Buckelman, Harry C. Shaker board for bowling pinsetter. 3,751,036, Cl. 273-43.00r.

Boddie, James Matthew. Shotgun shell primer rebuilder. 3,750,528, Cl. 86-37.000.

Bodenseewerk Geratetechnik GmbH: *See*—
Tumback, Hans, 3,750,300.

Boehringer Mannheim GmbH: *See*—
Bergmeyer, Hans Ulrich; Michael, Gerhard; Nelboeck-Hochstetter, Michael; Stork, Harald; and Weimann, Gunter, 3,751,408.

Bohac, Zdenek: *See*—
Vesely, Miloslav; Bohac, Zdenek; and Vondrak, Frantisek, 3,750,460.

Bohannon, William D., Jr., to Western Electric Company, Incorporated. Dispensing control mechanism. 3,750,830, Cl. 221-81.000.

Bohler, Gerard M. Slideably adjustable auxiliary lift handle. 3,751,094, Cl. 294-58.000.

Bohlinger, Arthur L.; and Miller, Richard H., to General Electric Company. Vacuum type circuit breaker. 3,751,617, Cl. 200-144.00b.

Bohm, Max: *See*—
Petrovsky, Peter; and Bohm, Max, 3,750,880.

Boinick, Irlin. Selectable temperature mixing valve. 3,750,701, Cl. 137-606.000.

Bolex International S.A.: *See*—
Thevenaz, Louis, 3,751,148.

Bolt Associates, Inc.: *See*—
Chelminski, Stephen V., 3,750,609.

Bolz, Gerhard: *See*—
Osieka, Hans; Koenig, Karl Heinz; Bolz, Gerhard; and Amann, August, 3,751,425.

Bomar, Steve H., Jr.; Clem, Robert B.; and Buckelew, Richard L., to United States of America, Army. Process for preparing ferrite and garnet raw materials for microwave applications. 3,751,366, Cl. 252-62.570.

Bonafiglia, Joseph C.; and Krieger, Harold. Hair pieces, wig and like products. 3,750,682, Cl. 132-53.000.

Bondarenko, Oleg Petrovich: *See*—
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schilkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.

Bond's Wear Pty. Limited: *See*—
Lee, Harold Barry, 3,750,601.

Bonnabaud, Joannes Francis Marcel; and Brat, Claude. Automatic tension regulation of yarn and wire winding devices. 3,750,972, Cl. 242-45.000.

Bonyhard, Peter Istvan, to Bell Telephone Laboratories, Incorporated. Time division multiplex network switching unit. 3,751,597, Cl. 179-15.0aq.

Bootha, Hendrik Johannes. Pipe clamps. 3,750,241, Cl. 24-279.000.

Borden, Inc.: *See*—
Messervey, Clifford Harry; and Riddell, Maynard Harry, 3,750,458.

Bore, Raymond, to Bennes Marrel, Saint-Etienne (Loire). Valves. 3,750,699, Cl. 137-494.000.

Borg-Warner Corporation: *See*—
Boyd, Clinton A., 3,751,192.
Maudlin, Wendell E., 3,750,418.
Meadows, William R., 3,751,552.
Roberts, Richard W., 3,751,150.

Borisuck, John F.; and LeChall, Ruben A., to Uniroyal, Inc. Apparatus for making a two color rubber sale by injection molding and applying uniting pressure. 3,751,200, Cl. 425-119.000.

Borner, Peter: *See*—
Imoehl, Wolfgang; and Borner, Peter, 3,751,445.

Boros, Yedidya. Multi-story building structure. 3,750,354, Cl. 52-236.000.

Borre, Henry C.; and Root, Wayne N., to Universal Oil Products Company. Means for effecting a multiple stage contact of a reactant stream. 3,751,232, Cl. 23-288.00r.

Borstcher, Georges Samuel. Device for hanging a shower-bath curtain. 3,750,818, Cl. 211-95.000.

Bortnick, Newman M., to Rohm & Haas Company. Process for deliquefying, purifying and blending polymers. 3,751,527, Cl. 260-899.000.

Bosch, Robert, GmbH: *See*—
Kahl, Eberhard, 3,750,833.
Leutner, Volkmar; and Romes, Romand, 3,750,534.
School, Hermann; Mauch, Harald; Glockler, Otto; Rittmannsberger, Norbert; Reichardt, Wolfgang; Werner, Peter; and Drews, Ulrich, 3,750,631.
Zechnall, Richard, 3,750,632.

Bostick, Edgar E.; and Jaquiss, Donald B. G., to General Electric Company. Compatible polycarbonate-siloxane composition. 3,751,519, Cl. 260-824.000.

Bottaccini, Manfred R.: *See*—
Gleason, Donald M.; Bottaccini, Manfred R.; and Reilly, Robert J., 3,750,648.

Botto, Giuseppe. Apparatus for excavating deep holes and trenches. 3,750,770, Cl. 175-173.000.

Bouras, Sam. Cooling radiator. 3,750,744, Cl. 165-76.000.

Bourat, Guy; and Fabre, Albert, to Rhone-Poulenc S.A. Microporous membranes. 3,751,536, Cl. 264-47.000.

Bourree, Rene: *See*—
Ancey, Gerard; and Bourree, Rene, 3,750,898.

Boussois Souchon Neuvesel: *See*—
Lissarrague, Maurice, 3,750,338.

Bowden, Roy Dennis, to Imperial Chemical Industries Limited. Process for producing bipyridyls. 3,751,422, Cl. 260-296.00d.

Bowen, David J., to Monsanto Company. Method and apparatus for monitoring melt spinning. 3,751,533, Cl. 264-40.000.

Box, Theodor M. Interlocking storage pallet. 3,750,596, Cl. 108-43.000.

Boyd, Clinton A., to Borg-Warner Corporation. Submersible pump drive system. 3,751,192, Cl. 417-411.000.

Boyle, John F. Interconnected jumping sticks. 3,751,032, Cl. 272-57.00e.

Bozek, John S., to Continental Can Company, Inc. Childproof safety closure. 3,750,817, Cl. 215-9.000.

BP Chemicals Limited: *See*—
Capp, Clifford William; and Brown, Peter John Nicholas, 3,751,493.

Bracci, George T., to Viatron Computer Systems Corporation. Tape magazine for recorder/reproducer. 3,751,043, Cl. 274-4.00c.

Bracht, Karl: *See*—
Jokiel, Theodor; and Bracht, Karl, 3,750,558.

Bradshaw, Arthur; Meadows, Frank W.; and Peake, Harold, to Service (Engineers) Limited. Machines for use in the manufacture of pottery ware. 3,751,206, Cl. 425-264.000.

Brammer, Max, to Panther Plast A/S. Speculum. 3,750,651, Cl. 128-20.000.

Brand, Karl. High pressure hose. 3,750,712, Cl. 138-124.000.

Brandon, William D.; and Drais, Jack A., to Caterpillar Tractor Company. Method of manufacture of helically wound laminated bearings. 3,750,249, Cl. 29-149.5nm.

Brandsma, Johan Rudolf; Klinkhamir, Jacob Fridrik; and Waumans, Benny Louisa Angelina, to U.S. Philips Corporation. Method of and device for the digital simulation of digital computer configurations. 3,751,645, Cl. 235-152.000.

Brasky, Joseph L., to Therma-Ray, Inc. Radiant panel heating system. 3,751,630, Cl. 219-345.000.

Brat, Claude: *See*—
Bonnabaud, Joannes Francis Marcel; and Brat, Claude, 3,750,972.

Braun AG: *See*—
Cobarg, Christian; Fenner, Erich; Guntersdorfer, Max; Heywang, Walter; Otto, Franz; Schofer, Rudolf; and Thomann, Helmut, 3,750,279.

Braun Aktiengesellschaft: *See*—
Lohberg, Peter, 3,751,713.

Braunhut, Harold N. Device for secretly observing visual intelligence. 3,750,316, Cl. 40-137.000.

Brauss, Erhard; and Dercho, Albert, to Proto Manufacturing Ltd. Air purifier. 3,750,370, Cl. 55-279.000.

Breed, David S. Liquid annular orifice dashpot timer with inertial effects. 3,750,389, Cl. 58-144.000.

Breeden, Robert Louis, to Bell Telephone Laboratories, Incorporated. Loudspeaking telephone. 3,751,602, Cl. 179-81.00b.

Bremer, Norman C. Bifurcated thermometer probe. 3,750,471, Cl. 73-342.000.

Brendel, Gottfried J.; and Shepherd, Lawrence H., Jr., to Ethyl Corporation. Tetrahydropyran derivative. 3,751,432, Cl. 260-315.100.

Brenneisen, Manfred; and Guentert, Siegfried, to Schwanog, Schwarzwalder Normteile Siegfried Guntert KG. Apparatus for cleaning metallic articles. 3,750,685, Cl. 134-57.00r.

Brenner, David C.: *See*—
Lloyd, Neil E.; Owen, Archibald A.; and Brenner, David C., 3,750,242.

Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J. Gasket-forming compositions. 3,751,525, Cl. 260-880.00b.

Brewer, Howell K.; and Peterson, Aivars V. Quick change-replaceable tread pneumatic tire. 3,750,733, Cl. 152-175.000.

Briggs, Bill N., to United States of America, Army. Thermal-mechanically processed low-alloy steel. 3,751,307, Cl. 148-36.000.

Brimmell, Ronald Harry. Christmas tree packaging means. 3,750,731, Cl. 150-52.00r.

British Iron and Steel Research Association, The: *See*—
Oxlade, Roy R., 3,750,448.

British Railways Board: *See*—
Luckett, Christopher Hawthorn; Cosgrove, John Travers; and Holland, Gordon Christopher, 3,750,879.

British Titan Limited: *See*—
Whitehead, Jack; Williams, Frank Ronald; and Gosden, Derek Vernon, 3,751,556.

Britt, Jack, to Rolls-Royce Limited. Air intake for a gas turbine engine. 3,750,689, Cl. 137-15.100.

Brodnitz, Michael H.; Pascale, John V.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Imparting oniony flavor to foodstuffs with thio-compounds. 3,751,269, Cl. 99-140.00r.

Broering, Leo H., to National Distillers and Chemical Corporation. Process for the recovery of rubbery polymers in crumb form. 3,751,402, Cl. 260-82.100.

Brookes, Neil Roger: *See*—
Cohen, Joseph David; Brookes, Neil Roger; Stark, Herbert Carl; Hirschkron, Robert; and Lawson, Gerald William, 3,750,397.

Brooks, Bobbie, Incorporated: *See*—
Carrle, Charles O.; Wensell, Edward W.; and Majusick, Thaddeus W., 3,750,604.

Brooks, Daryl G., to Porta-Tool, Incorporated. Portable line boring bar assembly. 3,751,175, Cl. 408-72.000.

Brossi, Arnold; and Pecherer, Benjamin, to Hoffmann-La Roche Inc. Alkoxy substituted-2,2 biphenyldimethanols. 3,751,487, Cl. 260-613.00r.

Brotzmann, Karl: *See*—
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, 3,751,242.

Brown & Root, Inc.: *See*—
Nolan, Clyde E., Jr., 3,750,451.

Brown Boveri/Krupp Reaktarbau GmbH: *See*—
Sturmer, Walter; and Handel, Hubert, 3,751,334.

Brown, Geoffrey Phillip. Muffling device for gas discharge. 3,750,841, Cl. 181-58.000.

Brown, J. Murray, to Electronic Enterprises, Inc. Remote electrically controlled two-way mirror. 3,751,141, Cl. 350-289.000.

Brown, James K., to Bingham, Samuel, Company. Printer's roller and method of making same. 3,750,250, Cl. 29-148.40d.

Brown, Neil L., to Bissett-Berman Corporation, The. Pressure transducer. 3,750,476, Cl. 73-398.000.

Brown, Peter John Nicholas: *See*—
Capp, Clifford William; and Brown, Peter John Nicholas, 3,751,493.

Brown, Robert O., to Westinghouse Electric Corporation. Guide vanes for supersonic turbine blades. 3,751,182, Cl. 416-191.000.

Brown, Samuel E. Crib and table combination. 3,750,198, Cl. 5-2.000.

Bruckner, Kurt; and Bruckner-Apparatebau Michelstadt GmbH. Apparatus for washing, drying and fixing a textile web. 3,750,428, Cl. 68-3.0ss.

Bruckner-Apparatebau Michelstadt GmbH: *See*—
Bruckner, Kurt; and Bruckner-Apparatebau Michelstadt GmbH, 3,750,428.

Bruen, Robert W.: *See*—
Seitz, Lamont J.; and Bruen, Robert W., 3,751,341.

Brunie, Jean-Claude; Constantini, Michel; Crenne, Noel; and Jouffret, Michel, to Rhone-Poulenc S.A. Preparation of aromatic aldehydes and the corresponding alcohols. 3,751,480, Cl. 260-599.000.

Brusa, Ugo. Continuous steel casting apparatus. 3,750,742, Cl. 164-276.000.

Bruton, William A.: *See*—
Packer, Louis L.; Bruton, William A.; and Woody, Bernard A., 3,751,661.

Brydolf, Robert; and Kellems, Kenneth K., to Ace General Corporation. Sliding door corner connector. 3,750,337, Cl. 49-411.000.

Bubula, Thomas J.; and Lohbauer, Kenneth R., to Caterpillar Tractor Company. Fluid motor control circuit with overspeed limiting means. 3,750,690, Cl. 137-106.000.

Bucci, Roberto: *See*—
Errani, Deo; and Bucci, Roberto, 3,750,432.

Buchacher, Ernest Robert, to Hawker Siddeley Canada Ltd. Chipping knives for chipping head assemblies. 3,750,726, Cl. 144-240.000.

Buchelt, Benno E., to Avco Corporation. Centrifugal hydraulic operated clutch. 3,750,789, Cl. 192-105.00a.

Bucher, Joyce L. Leg-stabilized embroidery hoop. 3,750,312, Cl. 38-102.200.

Buchwald, Fritz; and Pienkny, Dieter, to International Standard Electric Corporation. Pneumatic tube system with stand-by blower. 3,751,184, Cl. 417-4.000.

Buck, Homer G. Composite pressure sensitive adhesive sheet structure and process of making the same. 3,751,320, Cl. 156-268.000.

Buckelew, Richard L.: *See*—
Bomar, Steve H., Jr.; Clem, Robert B.; and Buckelew, Richard L., 3,751,366.

Buckner, Morgan D., to Dow Chemical Company, The. Method for the preparation of plastic foam. 3,751,377, Cl. 260-2.50e.

Budai, Zoltan: *See*—
Benko, Pal; Budai, Zoltan; Pallos, Laszlo; and Berenyi, Edit, 3,751,423.

Bundschuh, John J. Two frames per second defeat mechanism. 3,750,921, Cl. 226-62.000.

Bundschuh, John J.; and Roman, Robert J., to Eastman Kodak Company. Cinematographic projectors or the like and cartridges for use therewith. 3,750,976, Cl. 242-192.000.

Bunn, Dorrance P., Jr., to Texaco Inc. Conversion of hydrocarbons. 3,751,359, Cl. 208-155.000.

Bunting, Leslie J., to Eastman Kodak Company. Control device for projector film stripping and threading mechanism. 3,750,975, Cl. 242-192.000.

Burch, Paul F.: *See*—
Roberts, Walter L.; and Burch, Paul F., 3,751,328.

Bures, Ladislav: *See*—
Mladek, Milos; Burget, Bohumir; Bures, Ladislav; and Rajnoh, Jaroslav, 3,750,380.

Burget, Bohumir: *See*—
Mladek, Milos; Burget, Bohumir; Bures, Ladislav; and Rajnoh, Jaroslav, 3,750,380.

Burke, George K.; and Raines, Kenneth, to Burron Medical Products, Inc. Multi-way valve. 3,750,704, Cl. 137-625.470.

Burress, George Thomas, to Mobil Oil Corporation. Vapor-phase alkylation in presence of crystalline aluminosilicate catalyst. 3,751,506, Cl. 260-671.00r.

Burris, Donald J., to Outdoor Sports Industries, Inc. Riflescope mount. 3,750,318, Cl. 42-1.00s.

Burron Medical Products, Inc.: *See*—
Burke, George K.; and Raines, Kenneth, 3,750,704.

Burroughs Corporation: *See*—
Beery, Jack; and Luo, Zong S., 3,751,025.
Griggs, John O., Jr., 3,750,794.
Hoffman, Paul R., 3,750,919.
Koehn, William A, 3,751,650.
Wallace, Harry L., 3,750,795.

Burrows, Milford D.; and Morganson, Peter H., to Stanley Works, The. Portable reciprocating saw drive mechanism. 3,750,483, Cl. 74-50.000.

Burrows, Owen M., to Norton Company. Refractory cement lining for coreless induction furnaces. 3,751,571, Cl. 13-35.000.

Busby, Donald W.; and Goodfellow, Robert D., Jr., to Subterranean Tools Inc. Seal ring and method of making. 3,751,049, Cl. 277-235.00a.

Bush, Fred J., Jr., to NL Industries, Inc. Radiation shielding means joint and method of making same. 3,751,669, Cl. 250-506.000.

Butler, James L. Aerosol dispenser with auxiliary valve. 3,750,909, Cl. 222-148.000.

Bybee, Richard T.: *See*—
Drummond, Carl N.; Bybee, Richard T.; Mason, Fred L.; and Worsham, Herbert J., Jr., 3,751,333.

Bye-Jorgensen, Hans-Jorgen: *See*—
Madden, John; and Bye-Jorgensen, Hans-Jorgen, 3,750,965.

Bymoen, Darrell A.: *See*—
Swallow, Robert E.; Bymoen, Darrell A.; and West, Gaylon L., 3,750,586.

Bynn, Gilbert M.: *See*—
Berry, David A.; and Bynn, Gilbert M., 3,751,374.

Caelisch, Howard G.; Keister, Robert O.; Reed, Denvil E., Jr.; and Williamson, Kenneth D., to Union Carbide Corporation. Process for upgrading dripolene. 3,751,361, Cl. 208-255.00h.

Caldwell, Samuel L., to Caterpillar Tractor Company. Composite drive assembly. 3,750,489, Cl. 74-434.000.

Caliendo, Hildegard; and Poglia, Patricia. Bottlecleaner. 3,750,214, Cl. 15-26.000.

California R & D Center: *See*—
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence Temple, 3,750,330.

Calihan, Lawrence E.: *See*—
Kay, Edward L.; Roberts, Durward T., Jr.; Calihan, Lawrence E.; and Wakefield, Lynn B., 3,751,511.

Calizzano, Fernand; Chauvel, Michel; Malliere, Jean; and Rybner, Jean, to Compagnie Internationale pour l'Informatique. Automatic control system for loading and unloading magnetic tapes in digital recorder equipments. 3,751,604, Cl. 179-100.2ph.

Calton, Marion R.: *See*—
Satzler, Ronald L.; and Calton, Marion R., 3,750,263.

Cambrige Seven Associates, Inc.: *See*—
Bakanowsky, Louis J., 3,751,108.

Cameron, James MacDonald, to United Aircraft of Canada Limited. Vane rings. 3,751,180, Cl. 415-195.000.

Camon Kabushiki Kaisha: *See*—
Inoue, Mutsuhiro; and Takahashi, Yoichi, 3,751,165.

Campbell, Robert H.; and Cloyd, Harold S., to Continental Can Company, Inc. and Nosco Plastics, Incorporated. Impact absorbing corner structure. 3,750,598, Cl. 108-51.000.

Cannon, David C.; Johnson, Walter E.; and Turnage, Richard W., to Sonoco Products Company. Apparatus for making a concrete column form. 3,751,196, Cl. 425-4.000.

Canon Kabushiki Kaisha: *See*—
Komori, Shigehiro, 3,751,158.
Yamanaka, Torakiyo; Shigeta, Yoshihiro; and Suzaki, Kuniyoshi, 3,750,977.
Yanagisawa, Takeshi; Tanikoshi, Kinzi; and Ono, Yusuke, 3,750,540.
Yazaki, Mutsunobu, 3,750,552.

Capp, Clifford William; and Brown, Peter John Nicholas, to BP Chemicals Limited. Isomerisation process. 3,751,493, Cl. 260-654.00r.

Caracci, Joseph R.; Germino, Felix Joseph; and Yoshida, Tokuji Daniel, to CPC International, Inc. Starch derivatives. 3,751,410, Cl. 260-233.500.

Carbonnel, Emile: *See*—
Johannes, Conrad; Carbonnel, Emile; Sauty, Pierre; and Grenier, Maurice, 3,750,417.

Carborundum Company, The: *See*—
Barnes, Charles E., 3,750,339.
Homeyer, Roger H., 3,750,347.

Carcia, Peter P.: *See*—
Land, Edwin H.; and Carcia, Peter P., 3,750,551.

Carey, William H., to Walk-In-Boys, Inc., The. Plural rotatable drum chance device. 3,751,040, Cl. 273-143.00r.

Carlson, Edwin R., to Del-Pak Media Corporation. Filter media for liquid wastes treatment and method of forming the same. 3,750,887, Cl. 210-150.000.

Carlton, Louis A.: *See*—
Thompson, Gene D.; and Carlton, Louis A., 3,750,766.

Carmet Company: *See*—
Davis, Charles S., 3,751,114.

Carmichael, Thomas F.; Maier, Richard J.; and Kirkpatrick, William J., to Syncro Corporation. Lighting circuit system. 3,751,710, Cl. 315-79.000.

Carpenter, James F.; McCrary, Leon E.; Steube, Kenneth E.; Klein, Albert A., Jr.; and Kesler, George H., to McDonnell Douglas Corporation. Glow discharge coating apparatus. 3,750,623, Cl. 118-49.500.

Carrie, Charles O.; Wensell, Edward W.; and Majusick, Thaddeus W., to Brooks, Bobbie, Incorporated. Sewing method. 3,750,604, Cl. 112-265.000.

Carroll, David F.: *See—*
Blumenthal, Jack L.; Carroll, David F.; and Ogren, John R., 3,751,295.

Carter, Cecil O.: *See—*
Hutson, Thomas, Jr.; and Carter, Cecil O., 3,751,517.

Carter, Richard P.; and Policelli, Frederick J., to Hercules Incorporated. Filament wound vessel and method of manufacture. 3,750,823, Cl. 220-3.000.

Cash, John H., Jr.: *See—*
Bealle, John; and Cash, John H., Jr., 3,750,274.

Cason, George A.: *See—*
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,750,763.
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,750,769.

Caterpillar Tractor Company: *See—*
Back, John H.; Johnson, Elling Z.; Kranc, Stanley J.; and McDowell, Robert D., 3,750,960.
Bailey, John M.; and Zook, Donald G., 3,751,080.
Belke, William H.; Phelps, Eldon L.; Streight, William E.; and Untz, Robert W., 3,750,294.
Brandon, William D.; and Drais, Jack A., 3,750,249.
Bubula, Thomas J.; and Lohbauer, Kenneth R., 3,750,690.
Caldwell, Samuel L., 3,750,489.
Goade, James C.; McDonald, John A.; and Williamson, Herschel M., 3,750,537.
Hoffman, John L.; and Whitehurst, Gerald E., 3,750,635.
Rinaldo, James D., 3,750,888.
Satzler, Ronald L.; and Calton, Marion R., 3,750,263.
Smith, Roger M.; and Watts, Loyal O., 3,750,761.
Thais, James W.; and Daykin, Donald E., 3,751,076.

Caton, Michael Peter; Parker, Trevor; and Watkins, Gordon Leonard, to May & Baker Limited. Cyclopentane derivatives. 3,751,463, Cl. 260-557.00r.

Ceccato, Alberto P. Inflatable water ski. 3,750,203, Cl. 9-310.00d.

Cecchi, Carlo, to Fiat Societa per Azioni. Self regulating fluid pump. 3,751,190, Cl. 417-288.000.

Celanese Corporation: *See—*
Bethea, Thomas J.; Dixon, Charles R.; Hargett, Wyatt P., Jr.; and Stokes, William H., 3,750,922.
Gall, John S., 3,751,396.
Lloyd, Neil E.; Owen, Archibald A.; and Brenner, David C., 3,750,242.

Celotex Corporation, The, mesne: *See—*
Denker, Carl J.; and Ohlhauser, Ernest T., 3,751,131.

Centre d'Etude l'Energie Nucleaire: *See—*
Flipot, Alfred Jean; and Gilissen, Robert E. M., 3,751,538.

Centre Electronique Horloger S.A.: *See—*
Choffat, Hubert, 3,751,692.

Chapman, Harvey W., to Evans Products Company. Shipping system. 3,750,595, Cl. 105-376.000.

Chase, Fred L.: *See—*
Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., 3,751,525.

Chauvel, Michel: *See—*
Calizzano, Fernand; Chauvel, Michel; Malliere, Jean; and Rybner, Jean, 3,751,604.

Chelin, Charles R.: *See—*
Allegri, Theodore Henry; Chelin, Charles R.; Evans, Dafydo W.; and Thompson, Norman D., 3,750,814.

Chelminski, Stephen V., to Bolt Associates, Inc. Powerful thruster method and apparatus suitable for driving a member such as an anchor or pile into the earth, and anchoring and pile apparatus. 3,750,609, Cl. 114-206.00a.

Chemed Corporation: *See—*
Cowen, Samuel H., 3,751,323.

Chemiebau, Dr. A. Zieren, GmbH. & Co. KG: *See—*
Neumann, Ulrich, 3,751,560.

Chemnor Aktiengesellschaft: *See—*
Beer, Henri Bernard, 3,751,296.

Chemotronics International, Inc.: *See—*
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Chemplex Company: *See—*
Peterson, James Thomas; and Shida, Mitsuzo (said Shida assor. to), 3,751,281.

Chemtree Corporation: *See—*
Hall, William Cornelius; and Peterson, John Merriam, 3,751,387.

Chen, Fred F., to Eastman Kodak Company. Bi-component self-crimping modacrylic textile fiber. 3,751,332, Cl. 161-176.000.

Chenoweth, John Garfield: *See—*
Sampson, Roy John; Spencer, Christopher Buxton; and Chenoweth, John Garfield, 3,751,503.

Cherenson, Edward L., to Artisan Industries, Inc. Apparatus for expanding resin. 3,751,218, Cl. 432-134.000.

Chevas, George, to Pastuszynski, John E. and Chevas, George (Grace), Mrs. Paper roll holder. 3,750,971, Cl. 242-55.300.

Chevas, George (Grace), Mrs.: *See—*
Chevas, George, 3,750,971.

Chevron Research Company: *See—*
Kurkov, Victor P.; Lapporte, Seymour J.; and Ioland, William G., 3,751,453.

Chiang, Robert; and Perry, Eli, to Monsanto Company. Removal of water from liquid mixtures containing formaldehyde polymeric membrane. 3,750,735, Cl. 159-49.000.

Chippewa Lumber Industries, Inc.: *See—*
Stark, Joseph L., 3,750,728.

Chisholm, Douglas Stewart: *See—*
Alfrey, Turner, Jr.; Behr, Raymond Douglas; and Chisholm, Douglas Stewart, 3,751,288.

Cho, Alfred Yi, to Bell Telephone Laboratories, Incorporated. Germanium doped epitaxial films by the molecular beam method. 3,751,310, Cl. 148-175.000.

Choffat, Hubert, to Centre Electronique Horloger S.A. Temperature insensitive piezoelectric resonator mounting. 3,751,692, Cl. 310-9.100.

Christmann, Harold F.: *See—*
Woskow, Marvin Z.; and Christmann, Harold F., 3,751,512.

Chroma Printing Corporation: *See—*
Massa, Neal N., 3,751,282.

Chrysler Corporation: *See—*
Folkerts, Walter E.; and Jamieson, Reginald Y., 3,751,002.
Renneker, Dennis N., 3,751,091.

Chrysler, Louis G., Jr.: *See—*
Finney, Kelly D., 3,750,805.

Churchill, John W., to United States of America, Army. Preparation of aluminum hydride by reaction of an alkali metal hydride with boron trichloride. 3,751,566, Cl. 423-645.000.

Ciba-Geigy AG: *See—*
Angliker, Hans-Joerg; and Pater, Richard, 3,751,405.
Ziegler, Erich, 3,751,419.

Ciba-Geigy Corporation: *See—*
Habicht, Ernst; and Libis, Bernard, 3,751,436.
Konopka, Edward Alexander; and Gelzer, Justus Melchior, 3,751,567.
Libis, Bernard; and Habicht, Ernst, 3,751,430.
Menasse, Raphael; and Gatzi, Karl, 3,751,466.
Spivack, John D., 3,751,440.

Cincinnati Milacron-Heald Corporation: *See—*
Johnson, Donald R., 3,750,343.

Cioni, Paolo. Motorized landscaping machine carrying one or more landscaping appliances and capable of automatically circumventing obstacles. 3,750,376, Cl. 56-10.400.

Cisney, Merle E., to Crown Zellerbach Corporation. Phenolic thioethers and process for preparing same. 3,751,483, Cl. 260-609.00f.

Cities Service Company: *See—*
Hare, Paul N., 3,751,543.
Olechowski, Jerome Robert, 3,751,468.

Claflin, Hyle K.; and Belke, Jack T., to Westran Corporation. Trailer landing gear foot. 3,751,067, Cl. 280-150.500.

Clag Dominit Aktiengesellschaft: *See—*
Jokiel, Theodor; and Bracht, Karl, 3,750,558.

Clark, Arthur Wellesley Stewart: *See—*
Kay, Albert Ernest; and Clark, Arthur Wellesley Stewart, 3,750,275.

Clark, Chester G.: *See—*
Minbiole, Louis J., Jr.; Clark, Chester G.; and Neumann, John W., 3,751,297.

Clark, Frank S.; and Bannister, Loren W., to Monsanto Company. Compositions comprising boron compounds and polyphenyl thioethers. 3,751,367, Cl. 252-78.000.

Clark, Frank S.; and Bannister, Loren W., to Monsanto Company. Compositions comprising boron compounds and polyphenyl thioethers. 3,751,368, Cl. 252-78.000.

Clark, Jerald R., to Farmers Investment Company. Weed cutter. 3,750,377, Cl. 56-10.400.

Claunch, Maxine, to Claunch, Ralph B. Hair protector. 3,750,681, Cl. 132-49.000.

Claunch, Ralph B.: *See—*
Claunch, Maxine, 3,750,681.

Claus, George. Method and apparatus for continuous monitoring of dissolved organics. 3,751,167, Cl. 356-51.000.

Clausen, Erik; and Clausen, Johannes. Rear projection screen. 3,751,135, Cl. 350-117.000.

Clausen, Howard Fred: *See—*
Zaun, Richard David; and Clausen, Howard Fred, 3,750,211.

Clausen, Johannes: *See—*
Clausen, Erik; and Clausen, Johannes, 3,751,135.

Clem, Robert B.: *See—*
Bomar, Steve H., Jr.; Clem, Robert B.; and Buckelew, Richard L., 3,751,366.

Clevepak Corporation: *See—*
Martin, Robert A., 3,750,603.

Clinage, Ronald E., to Gorber, A. L., Company. Container with axial interlocking means. 3,750,934, Cl. 229-39.00b.

Cloyd, Harold S.: *See—*
Campbell, Robert H.; and Cloyd, Harold S., 3,750,598.

Cobarg, Christian; Fenner, Erich; Guntersdorfer, Max; Heywang, Walter; Otto, Franz; Schofer, Rudolf; and Thomann, Helmut, to Braun AG. Dry shaver construction. 3,750,279, Cl. 30-43.900.

Codrino, Giuseppe. Diffuser with one or more attachment members for light guiding cables and provided with a light attenuating device. 3,751,655, Cl. 240-8.160.

Cogan, Richard, to General Electric Company. Compressive forming. 3,750,442, Cl. 72-57.000.

Cohen, Joseph David; Brookes, Neil Roger; Stark, Herbert Carl; Hirschkron, Robert; and Lawson, Gerald William, to General Electric Company. Area control insert for maintaining air flow uniformity around the combustor of a gas turbine engine. 3,750,397, Cl.60-39.360.

Cohen, Leonard H.; Zweidler, Alfred; Hafner, William F.; and Ellis, Robert J., to Institute for Cancer Research, The. Isolation and fractionation of organs of small animals. 3,750,964, Cl. 241-29.000.

Cohn, Mark J. Film package. 3,751,253, Cl. 96-67.000.

Cole, Quintin Perry, to General Electric Company. Commutator having commutating segments adhesively bonded in shear to a base member. 3,751,700, Cl. 310-235.000.

Coleman, Harold L.; Malson, Harold A.; Du Four, Howard R.; and Olt, Richard G., to Monsanto Research Corporation. Concentric cylinder assembly for producing pulsed neutrons. 3,751,668, Cl. 250-502.000.

Coleman, Paul E.; Haub, John T.; Sullivan, Joseph T.; and Pommer, Dennis L., to General Mills, Inc. Coextrusion apparatus. 3,751,202, Cl. 425-133.000.

Coles, Herbert George, Jr., to RCA Corporation. Signal transition detection circuit. 3,751,636, Cl. 235-61.11e.

Colgate-Palmolive Company: *See*—
Gobert, Michel Rene Roger, 3,751,222.

Collins Radio Company: *See*—
Walker, Ferman L., 3,750,456.

Collins, Robert F., to Kendall Company, The, mesne. Lithotomy drape. 3,750,663, Cl. 128-132.00d.

Collins, Robert F., to Kendall Company, The. Fenestrated surgical drape. 3,750,664, Cl. 128-132.00d.

Colorado Instruments, Inc.: *See*—
Hansen, Wray C., 3,751,612.

Colt Industries Operating Corporation: *See*—
Bell, Oliver A., Jr., 3,751,622.
Roy, Robert E., 3,750,319.

Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See*—
Newman, Douglas A., 3,751,286.
Newman, Douglas A., 3,751,318.

Commercial Solvents Corporation: *See*—
Wehrmeister, Herbert L.; and Hodge, Edward B., 3,751,431.

Commissariat a l'Energie Atomique: *See*—
Pascquet, Adrien, 3,750,457.

Communications Satellite Corporation: *See*—
Wu, William W., 3,751,648.

Compagnia Italiana Westinghouse Freni e Segnali: *See*—
Nardi, Giancarlo, 3,751,016.

Compagnie des Compteurs: *See*—
Ducousset, Robert Eugene Raymond, 3,750,472.

Compagnie Internationale pour l'Informatique: *See*—
Calizzano, Fernand; Chauvel, Michel; Malliere, Jean; and Rybner, Jean, 3,751,604.

Compo Industries, Inc.: *See*—
Prahl, Frederick A., Jr.; and Dunlap, Robert B., 3,751,540.

Compteurs Schlumberger: *See*—
Blouin, Louis, 3,751,592.

Computer Devices Corporation: *See*—
Morreale, Anthony P., 3,751,696.

Confer, Robert E. Carton and method of making. 3,750,538, Cl. 93-94.00r.

Conklin, James T.; and Rogers, James B., to Penetryn Systems Inc. Method and apparatus for testing for leaks in pipes. 3,750,711, Cl. 138-97.000.

Conner, James M.: *See*—
Salvador, Henry J.; and Conner, James M., 3,751,145.

Constable, Geoffrey Ernest Patrick, to Smiths Industries, Limited. Access-control equipment and item dispensing systems including such equipment. 3,750,828, Cl. 221-2.000.

Constantin Film GmbH: *See*—
Greger, Georg, 3,751,144.

Constantini, Michel: *See*—
Brunie, Jean-Claude; Constantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,751,480.

Continental Can Company, Inc.: *See*—
Bozek, John S., 3,750,817.
Campbell, Robert H.; and Cloyd, Harold S., 3,750,598.
Knipe, Leonard E., 3,750,862.

Continental Oil Company, mesne: *See*—
Eggert, W. Keith, 3,751,335.

Control Products Corporation: *See*—
Anderson, Bryce P., 3,750,966.

Converse, Helena M. Simple shoring to form ditches-canals-pillars and posts. 3,750,410, Cl. 61-41.00a.

Conzinc Riotinto of Australia, Limited: *See*—
Phillips, Kein James, 3,751,019.

Cook, Henry D., to K&M Enterprises, Incorporated. Assembly for washing building windows. 3,750,686, Cl. 134-95.000.

Cook, John R., to Engineered Foam Plastics, Inc. Shipping container. 3,750,871, Cl. 206-46.0fc.

Cooke, Ann V., to Grove Company, The. Pants. 3,750,193, Cl. 2-237.000.

Coon, Clifford L.: *See*—
Hill, Marion E.; Ross, Donald L.; and Coon, Clifford L., 3,751,473.

Cooper, Cleveland N.: *See*—
Pandjiris, Anthony K.; and Cooper, Cleveland N., 3,750,844.

Cooper, David O. Electronic photoflash unit. 3,751,714, Cl. 315-241.00p.

Cooper, Joseph, to Scovill Manufacturing Company. Dispenser for paper clips and the like. 3,750,868, Cl. 206-1.00r.

Copes-Vulcan, Incorporated: *See*—
Reed, James N., 3,750,230.

Cords, Ernest, to Hughes Aircraft Company. Modular airborne launcher. 3,750,530, Cl. 89-1.807.

Corhart Refractories Company: *See*—
Nelson, Michael A.; Patrick, Robert F.; and Wehrenberg, Thomas M., 3,751,273.

Corman, Edward M.: *See*—
Balzer, Claude P.; Corman, Edward M.; and Reiff, Almer A., 3,750,359.

Cornelius, Gail, to Wade, R. M., & Company. Mayday safety shutoff system responsive to errant towers of an automatic irrigation system. 3,750,696, Cl. 137-344.000.

Cornell, John A.: *See*—
Cowperthwaite, George F.; and Cornell, John A., 3,751,378.

Corning Glass Works: *See*—
Grego, Peter; and Howell, Robert G., 3,751,238.

Cosgrove, John Travers: *See*—
Luckett, Christopher Hawthorn; Cosgrove, John Travers; and Holland, Gordon Christopher, 3,750,879.

Costantini, Siro J.; and Stockton, Thomas R., to Ford Motor Company. High speed overrunning clutch. 3,750,782, Cl. 192-45.000.

Cote, Raymond A., to Rexham Corporation, mesne. Shadow box carton. 3,750,870, Cl. 206-45.140.

Courneya, Calice G. Arrow fluid-dynamics. 3,751,037, Cl. 273-106.50c.

Cowen, Samuel H., to Chemed Corporation. Apparatus for producing a contoured neck towel. 3,751,323, Cl. 156-463.000.

Cowperthwaite, George F.; and Cornell, John A., to Sartomer Industries, Inc. Inhibiting PR evulcanization of rubber with polyfunctional methacrylate monomers as cross-linking coagents with peroxides. 3,751,378, Cl. 260-4.000.

CPC International, Inc.: *See*—
Caracci, Joseph R.; Germino, Felix Joseph; and Yoshida, Tokuji Daniel, 3,751,410.

Craig, Leonard Jack. Random access time-shaped microform image recovery apparatus. 3,751,006, Cl. 353-25.000.

Cramer, Rudolph E.; Van Der Viliet, Cornelis; and Ouwerkerk, Johannes H. W., to Koninklijke Nederlandische Hoogovens en Staalfabrieken N.V. Cooled furnace and a cooling system therefor. 3,750,629, Cl. 122-6.00r.

Crane, Walton B., to Allied Plastics Company. Handle for produce container. 3,750,936, Cl. 229-52.0aw.

Crawford, John C. Sign holder and assembly. 3,750,314, Cl. 40-125.00h.

Crayton, John W.: *See*—
Miller, Robert G.; Crayton, John W.; Farmer, Charles G.; and Satzler, Ronald L., 3,750,927.

Cremona, Angelo. Veneer slicer machine. 3,750,725, Cl. 144-178.000.

Crennan, Timothy P.; and Jadoiss, Donald B. G., to General Electric Company. High ignition temperature polymers substituted with halogen substituted aromatic groups. 3,751,400, Cl. 260-47.0xa.

Crenne, Noel: *See*—
Brunie, Jean-Claude; Constantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,751,480.

Cresswell-Clough, Derrick. Ticket vending machine. 3,750,790, Cl. 194-2.000.

Crisa, Anthony. Automotive locking system. 3,750,430, Cl. 70-1.500.

Croh, Gunther, to U.S. Philips Corporation. Optical apparatus for symbol recognition comprising a plurality of channels. 3,751,132, Cl. 350-3.500.

Cromeens, Jeff Y., to Industrial Woodworking Machine Company, Inc. Telescoping arbor assembly. 3,750,513, Cl. 83-425.400.

Cronojevich, Ranko P.; and Lowe, Donald F., to American Metal Climax, Inc. Process of separating cobalt from nickel by means of ammonica. 3,751,558, Cl. 423-144.000.

Cross, David C.: *See*—
Fowler, Roland V.; White, James A.; and Cross, David C., 3,750,643.

Cross, Peter E.; Stichbury, James R.; and Thorpe, Eric F., to Pfizer Inc. N, N-dialkyl -2- [2-(2-cycloalkylvinyl) phenoxy] alkylamines. 3,751,470, Cl. 260-570.700.

Crown Parking Products Co., mesne: *See*—
Greer, Edward M., 3,750,899.

Crown Zellerbach Corporation: *See*—
Cisney, Merle E., 3,751,483.

Crowther, Philip Simpson: *See*—
Austin, Christopher Frederic; Crowther, Philip Simpson; Warren, David; and Howitt, David, 3,750,425.

Cuddigan, Robert W.: *See*—
Menough, Richard M.; and Cuddigan, Robert W., 3,751,316.

Cugini, Edward T., to Grant Oil Tool Company 5 Underreamer having variable arm extension. 3,750,771, Cl. 175-269.000.

Culbreth, Fay H. Orthodontic arch wire bracket assembly. 3,750,288, Cl. 32-14.00a.

Cully, Andre Fornerod, to Tamper Inc. Methods for determining the position of a point in space relative to a geometrical line defined by at least two of its points and installation for performing same. 3,751,169, Cl. 356-152.000.

Cumberland Engineering Company, Inc.: *See*—

Gotham, Stanley T.; and Thurber, Gerald A., 3,750,512.
Cunningham, Byron H. Skyboat. 3,750,978, Cl. 244-2.000.
Curtiss-Wright Corporation: *See—*
Zoll, August H., 3,750,392.
Cushman Industries, Incorporated: *See—*
Swanson, Linwood B., 3,751,053.
Cushman, Robert H., to Jade Corporation. Method of preforming solder to a plurality of terminals. 3,750,265, Cl. 29-471.300.
Cutler, Stanley: *See—*
Groves, Sydney L.; La Branche, Harvey M.; and Cutler, Stanley, 3,750,522.
D'Agostino, Joseph, Jr. Boat docking device. 3,750,612, Cl. 114-221.000.
Dahl, Klaus J., to Raychem Corporation. Spray drying process. 3,751,398, Cl. 260-47.00r.
Dahle, Gerald W. Pencil sharpening machine. 3,750,724, Cl. 144-28.100.
Dahlman, Keith E., to Minnesota Mining and Manufacturing Company. Polyamide-diazo resin composition. 3,751,257, Cl. 96-91.00r.
Daigle, Jack R.; Haregger, James D.; Zollinger, Howard A.; and Vander Meer, Clayton H., to Rapistan, Inc. Code reading system. 3,751,640, Cl. 235-61.11e.
Daiichi Seiyaku Co., Ltd.: *See—*
Takeya, Yasumitsu; and Tsunakawa, Nobutaka, 3,751,356.
Daimler-Benz Aktiengesellschaft: *See—*
Deutschmann, Herbert; Kruczek, Wolfgang; and De Lazzer, Karl-Heinz, 3,750,403.
Gotz, Hans, 3,750,555.
D'Amico, John Joseph, to Monsanto Company. Vulcanizable compositions containing cyanoisothiazolyl bis (sithiocarbamates). 3,751,401, Cl. 260-79.50b.
Dancy, William B., to International Minerals & Chemical Corporation. Benefication of a clay containing sylvinite ore. 3,750,963, Cl. 241-20.000.
Dane, Ivo; Fromandi, Guido; Blankenstein, Paul; Muller, Erwin; Freytag, Helmut; and Wother, Wolfgang, to Bayer Aktiengesellschaft. Adhering textiles and metals to rubber and product. 3,751,331, Cl. 161-83.000.
Danek, Michael J., to General Motors Corporation. Brake operated throttle override device. 3,750,780, Cl. 192-3.00r.
Danfoss A/S: *See—*
Holme, Bent Melchior Karlsen, 3,750,840.
D'Angelo, Joseph John. Multi-level apparatus for folding large flexible webs. 3,751,029, Cl. 270-69.000.
Darby, Joseph J., III: *See—*
Darby, Joseph J., Jr.; and Darby, Joseph J., III, 3,750,365.
Darby, Joseph J., Jr.; and Darby, Joseph J., III, to Darby Manufacturing Corporation, The. Method and apparatus for opening and sealing bags. 3,750,365, Cl. 53-29.000.
Darby Manufacturing Corporation, The: *See—*
Darby, Joseph J., Jr.; and Darby, Joseph J., III, 3,750,365.
Darling, Reyi: *See—*
Darling, Stanley N.; and Darling, Reyi, 3,750,943.
Darling, Stanley N.; and Darling, Reyi. Voting apparatus. 3,750,943, Cl. 235-54.00r.
Dart Industries Inc.: *See—*
Berry, David A.; and Bynn, Gilbert M., 3,751,374.
Dassler, Adolf. Method of forming a shoe lining. 3,750,209, Cl. 12-146.00c.
Datel Corporation: *See—*
Becker, Harold D., 3,750,793.
Davidovich, Yakov Gilievich: *See—*
Fridman, Georgy Nikolaevich; Fialkov, Abram Samuilovich; Davidovich, Yakov Gilievich; Ivanova, Irina Dmitrievna; Sysoeva, Ljudmila Petrovna; Gluskin, Abram Ykovlevich; Galiskarov, Rimm Zigangirovich; Liberman, Esfir Lvovna; and Pomortseva, Vera Stepanovna, 3,751,294.
Davis, Charles F. Motor-driven anchor davit. 3,750,610, Cl. 114-210.000.
Davis, Charles S., to Carmet Company. Cutter bit and block. 3,751,114, Cl. 299-85.000.
Davis, Vayne R.: *See—*
Gates, Thomas W.; Gates, Wesley R.; and Davis, Vayne R., 3,750,303.
Davy and United Engineering Company, Limited: *See—*
Harrison, Robert Henry; Russell, John Patrick; and Middleton, Anthony Edward, 3,750,436.
Dawson, Chester H., to Remington Arms Company, Inc. Armored metal tools and production thereof. 3,751,283, Cl. 117-22.000.
Dawson, Paul Ernest: *See—*
Nerurkar, Mohanial Shantaram; and Dawson, Paul Ernest, 3,751,280.
Dawson, W. John, Jr.; Reyburn, Mary Lou; and Roettger, Richard F. Cervical spine traction apparatus. 3,750,658, Cl. 128-75.000.
Daykin, Donald E.: *See—*
Thais, James W.; and Daykin, Donald E., 3,751,076.
Dayton Steel Foundry Company, The: *See—*
Foster, Alan D., 3,751,021.
De Diemar, Ronald B.; and Archer, Fred Curtis, to Barber-Greene Company. Gyratory crusher having crusher head restrainer. 3,750,809, Cl. 241-209.000.
De Diemar, Ronald B.; and Schuman, Le Roy J., to Barber-Greene Company. Gyratory crusher having interchangeable head mantles. 3,750,967, Cl. 241-207.000.
De Frate, Louis A.: *See—*
Batt, Richard S. W.; and De Frate, Louis A., 3,750,736.
De Graff, Peter H.; and Lee, James W., to National Cash Register Company, The. Self-interlocking keyboard. 3,750,796, Cl. 197-107.000.
De Lazzer, Karl-Heinz: *See—*
Deutschmann, Herbert; Kruczek, Wolfgang; and De Lazzer, Karl-Heinz, 3,750,403.
De Loisy, Maurice, to Etablissements Torrix. Pressure-operated tape switch. 3,751,615, Cl. 200-86.000.
De Luca, Raymond F., to Georgia-Pacific Corporation. Disposable diapers with adhesive fastening tapes. 3,750,669, Cl. 128-287.000.
Dean, Carl J.: *See—*
Wright, David M.; and Dean, Carl J., 3,751,129.
Debus, Karl; Debus, Karl-Jurgen; and Mohr, Eberhard, to Mergenthaler Linotype GmbH. Photocomposing machine. 3,750,554, Cl. 95-4.500.
Debus, Karl-Jurgen: *See—*
Debus, Karl; Debus, Karl-Jurgen; and Mohr, Eberhard, 3,750,554.
Deck, James R.: *See—*
Bishop, Harold F.; and Deck, James R., 3,751,308.
Decorato, Frank. Clothes line. 3,750,891, Cl. 211-119.020.
Deere & Company: *See—*
Hayes, Ira Wade; and Barnes, Vernon John, 3,751,050.
Patterson, Roger Lee; and Isachsen, Henning, 3,751,071.
Trapp, Robert Lee, 3,750,774.
Zaun, Richard David; and Clausen, Howard Fred, 3,750,211.
Deering Milliken Research Corporation: *See—*
Klein, Norman E., 3,750,923.
Deike, Robert F. Stabilizer for mobile homes. 3,750,349, Cl. 52-23.000.
DeJong, Willem P.: *See—*
van der Voori, Henricus G. P.; and DeJong, Willem P., 3,751,475.
Del Mar Engineering Laboratories: *See—*
Huxley, Thomas C., III, 3,750,846.
Del-Pak Media Corporation: *See—*
Carlson, Edwin R., 3,750,887.
Delavarenne, Serge Y., to Union Carbide Corporation. Preparation of sodium and potassium fluoroethylenes. 3,751,492, Cl. 260-653.300.
Delbag-Luftfilter Gesellschaft mit beschrankter: *See—*
Neumann, Gerhard Max, 3,750,374.
Demi, Roy C., to Robertshaw Controls Company. Method of mounting a control device to a fuel supply manifold. 3,750,247, Cl. 29-157.00r.
den Hartog, Willem Cornelis, to N.V. Industrieele Handelscombinatie Holland. Process for the continuous dredging of incoherent material, particularly sandy material, with a circular path. 3,750,408, Cl. 61-2.000.
Denker, Carl J.; and Ohlhauser, Ernest T., to Celotex Corporation, The, mesne. Rectangular wall cabinet for recessed or surface mounting. 3,751,131, Cl. 312-242.000.
Denning, George S., Jr.: *See—*
Sipos, Frank; Pals, Donald T.; and Denning, George S., Jr., 3,751,404.
Depmeyer, Lothar: *See—*
Messner, Sigfried; Depmeyer, Lothar; Barth, Lothar; Graup, Josef; and Rhein, Stein A., 3,750,310.
Derby, Robert L.: *See—*
Hall, Richard H.; Haigh, Daniel H.; Derby, Robert L.; and Jennings, Walter E., 3,750,688.
Derbyshire, George C., to Jacobs Manufacturing Company, Limited, The. Drill chuck. 3,751,052, Cl. 279-18.000.
Dercho, Albert: *See—*
Brauss, Erhard; and Dercho, Albert, 3,750,370.
Derick, Lincoln; Jordan, Andrew Stephen; and Verleur, Hans Willem, to Bell Telephone Laboratories, Incorporated. Use of a glass dopant for GaP and electroluminescent diodes produced thereby. 3,751,309, Cl. 148-171.000.
Descary, John Gilbert: *See—*
Rodwin, Stephen Anthony; and Descary, John Gilbert, 3,750,306.
Desell, Elva Lee. Crowned annular hairpiece with central loops. 3,750,683, Cl. 132-55.000.
Design West Incorporated: *See—*
Smith, Dale D.; and Sullivan, James P., 3,750,890.
Detzel, Josef; and Schragle, Walter, to Lever Brothers Company. Carrier packs. 3,750,874, Cl. 206-65.00e.
Deutsch, Friedrich. Ski edge. 3,751,054, Cl. 280-11.13e.
Deutschmann, Herbert; Kruczek, Wolfgang; and De Lazzer, Karl-Heinz, to Daimler-Benz Aktiengesellschaft. Line and/or space for receiving or conducting hot gases. 3,750,403, Cl. 60-323.000.
DeVries, Vern Gordon: *See—*
Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,416.
Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,417.
Devylder, Rene Simon: *See—*
Sourbet, Claude Pierre; and Devylder, Rene Simon, 3,750,821.
Dhingra, Yog R., to Dow Chemical Company, The. Alpha chlorination of acid chlorides. 3,751,461, Cl. 260-544.00y.
Diablo Systems, Incorporated: *See—*
Gabor, Andrew, 3,751,693.
Diamond Shamrock Corporation: *See—*
Beckers, Norman L., 3,751,494.
Huba, Francis, 3,751,437.

DiBenedetto, Joseph D.; and Kisner, Walter M., to United States of America, Army. Method of forming rifling in a gun barrel by chemical milling. 3,751,313, Cl. 156-16.000.

Dibrell, James W., to Microwire Corporation. Method of and apparatus for wire receiving and storing. 3,750,974, Cl. 242-83.000.

Dick, Raymond S., to Hoerner Waldorf Corporation. Carton opening means. 3,750,931, Cl. 229-37.00r.

Dickerson, Paul B.: *See—*
Binger, Wayne W.; Zelly, Walter O.; Hoch, Fred R.; and Dickerson, Paul B., 3,751,626.

Diesel Kiki Kabushiki Kaisha: *See—*
Ohtani, Yoshio; and Kakijima, Todomu, 3,750,633.

Dietrich, Heinz J.; and Steiger, Edward L., to Owens-Illinois, Inc. Preparation of liquid-crystal compounds. 3,751,467, Cl. 260-566.00f.

Dietrich, Karl-Heinz: *See—*
Pfeifer, Josef; Hofmann, Wilfried; and Dietrich, Karl-Heinz, 3,750,553.

Dietz, Eberhard: *See—*
Donath, Hans; Beier, Hans Peter; Otto, Gottfried; Franke, Erich; Kornitzky, Gunter; Dietz, Eberhard; and Wenzel, Klaus, 3,750,826.

Dietz, Kurt, to Siemens Aktiengesellschaft. Rotating anode X-ray tube. 3,751,702, Cl. 313-60.000.

Digirolamo, William J., to Olin Corporation. System for controlling engine priming fluid flow. 3,750,639, Cl. 123-187.500.

Dilli, Frederick H.; and Konnerth, Karl L., Jr., to International Business Machines Corporation. System for performing spectral analyses under computer control. 3,751,643, Cl. 235-151.320.

Dillon, Neil J.; and Sincich, Boris R., to TRW Data Systems, Inc. Digital computer and form reader for inventory control and recording cash transactions. 3,751,637, Cl. 235-61.90a.

Dionne, Leo Paul: *See—*
Ott, William C.; and Dionne, Leo Paul, 3,750,466.

Dixon, Charles R.: *See—*
Bethea, Thomas J.; Dixon, Charles R.; Hargett, Wyatt P., Jr.; and Stokes, William H., 3,750,922.

Dixon, K., Corporation: *See—*
Atchley, Raymond D.; Pegram, John B.; and Dixon, Kenneth K., 3,750,878.

Dixon, Kenneth K.: *See—*
Atchley, Raymond D.; Pegram, John B.; and Dixon, Kenneth K., 3,750,878.

Dodge, Fred R. E. Marking device. 3,750,292, Cl. 33-41.00d.

Dodman, David; Wilkins, Malcolm; and Woolley, John Mathers, to Imperial Chemical Industries, Limited. Nitrosobinzene stabilized with heavy metal compounds. 3,751,490, Cl. 260-647.000.

Dofton, Ronald, to Du-Al Furniture Limited. Method of making a seat shell. 3,751,109, Cl. 297-445.000.

Dolmetsch, Arnold, Limited: *See—*
Dolmetsch, Carl Frederick, 3,750,521.

Dolmetsch, Carl Frederick, to Dolmetsch, Arnold, Limited. Recorders. 3,750,521, Cl. 84-380.000.

Dome, Robert B., to General Electric Company. Single second detector system for a color television receiver. 3,751,590, Cl. 178-5.40r.

Dominion Engineering Works, Limited: *See—*
Rodwin, Stephen Anthony; and Descary, John Gilbert, 3,750,306.

Domtar Limited: *See—*
Akkerman, Allardus A., 3,750,935.

Don Chemical Company, The: *See—*
Small, James E.; and Jeffries, Sampson F., 3,751,277.

Donath, Hans; Beier, Hans Peter; Otto, Gottfried; Franke, Erich; Kornitzky, Gunter; Dietz, Eberhard; and Wenzel, Klaus, to Ministerium fur Verkehrswesen. Latching apparatus for removable roof of transport containers, particularly I.S.O. containers. 3,750,86, Cl. 220-55.00g.

Dordoni, Innocente. Component for pneumatic logical circuits with two distinct permission controls. 3,750,707, Cl. 937-625.480.

Dornier A.G.: *See—*
Partzsch, Peter, 3,750,470.

Dorot, Henri: *See—*
Verlinde, Auguste; and Dorot, Henri, 3,750,406.

Dorsch, Robert E., to Uniroyal, Inc. Reinforcing element and fitting for a flexible walled container. 3,750,730, Cl. 150-8.000.

Doublet, Fernand Noel, to Societe Anonyme Tubest. Process and device for producing thin walled or extra-thin walled smooth tubes by welding. 3,751,623, Cl. 219-67.000.

Dow Chemical Company, The: *See—*
Alfrey, Turner, Jr.; Behr, Raymond Douglas; and Chisholm, Douglas Stewart, 3,751,288.
Buckner, Morgan D., 3,751,377.
Dhingra, Yog R., 3,751,461.
Haigh, Daniel H.; and Louch, James B., 3,751,524.
Hall, Richard H.; Haigh, Daniel H.; Derby, Robert L.; and Jennings, Walter E., 3,750,688.
Nyquist, Richard A.; and Reder, Thomas L., 3,751,421.
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Poffenberger, Noland; and Watson, William David, 3,751,484.
Reifschneider, Walter, 3,751,424.
Smith, Robert Stacy, Jr., 3,750,353.
Solem, Richard H.; and Berg, Lawrence D., 3,751,444.

Dower, Ethell J., to Warren Automatic Tool Company. Pneumatic measurement apparatus. 3,750,480, Cl. 73-506.000.

Drais, Jack A.: *See—*
Brandon, William D.; and Drais, Jack A., 3,750,249.

Drescher, Warren F., to Albee Homes, Inc. Dolly system. 3,750,594, Cl. 104-243.000.

Dresser Industries, Inc.: *See—*
Pausky, Paul A., 3,750,440.
Williams, Robert Carl, 3,750,423.
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,750,763.
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,750,769.

Drews, Ulrich: *See—*
School, Hermann; Mauch, Harald; Glockler, Otto; Rittmannsberger, Norbert; Reichardt, Wolfgang; Werner, Peter; and Drews, Ulrich, 3,750,631.

Drost, Albertus, to U.S. Philips Corporation. Combined data and set-reset flip-flop with provisions for eliminating race conditions. 3,751,683, Cl. 307-218.000.

Drucker, Robert M., to Bio-Consultants, Inc. Centrifuge power head with mounting means. 3,750,941, Cl. 233-26.000.

Drummond, Carl N.; Bybee, Richard T.; Mason, Fred L.; and Worsham, Herbert J., Jr. Nuclear reactor core monitoring system. 3,751,333, Cl. 176-19.00r.

Dryden, Kerin Lee; and Ebrey, Roger George Anthony, to Western Electric Company, Incorporated. Crimping tool for forming peripheral grooves in cylindrical articles. 3,750,453, Cl. 72-402.000.

Du Four, Howard R.: *See—*
Coleman, Harold L.; Malson, Harold A.; Du Four, Howard R.; and Olt, Richard G., 3,751,668.

Du Pont de Nemours, E. I., and Company: *See—*
Batt, Richard S. W.; and De Frate, Louis A., 3,750,736.
Beyer, James N.; Moore, Earl P., Jr.; and Rusher, Robert L., 3,751,276.
Landman, Dirk, 3,750,252.
Middleton, William J., 3,751,485.
Smith, Drexel Kermit, 3,750,302.
Sowards, Donald Maurice, 3,751,213.

Du-Al Furniture Limited: *See—*
Dofton, Ronald, 3,751,109.

Dubach, Werner. Closure for container, and more particularly for jars, bottles, cans and the like. 3,750,822, Cl. 215-52.000.

Dubay, Alvin H. Replaceable bushing for sanitary conveyor. 3,751,122, Cl. 308-63.000.

Duckler, Sheldon; Kennedy, David P.; and Norland, Kenneth S., to Polaroid Corporation. Flexible plastic flash illumination devices with solid pyrotechnic material. 3,751,656, Cl. 240-13.000.

Ducousset, Robert Eugene Raymond, to Compagnie des Compteurs. Apparatus for measuring the mass flow of gases. 3,750,472, Cl. 73-205.00d.

Duke, Douglas Roy; and Pearson, Asa M., to Air Guard Inc. Air purifying means. 3,750,556, Cl. 98-2.00h.

Duke, Jimmy R.: *See—*
Starkey, George W.; Sitton, Robert L.; Duke, Jimmy R.; and Miller, Walter E., Jr., 3,751,166.

Dulebohn, Richard E.; and Gordon, Leonard W., to Elixir Industries. Closure mechanism for louver windows. 3,750,332, Cl. 49-74.000.

Dunder, David N.; and James, Howard Lee, to Technibilt Corporation. Cantilever-type, nestable shopping carts. 3,751,059, Cl. 280-33.99f.

Dunlap, Robert B.: *See—*
Prahl, Frederick A., Jr.; and Dunlap, Robert B., 3,751,540.

Dunlop Limited: *See—*
Jacquemet, Andre, 3,750,946.
Seager, Brent H. A.; and Williams, Geoffrey A., 3,751,631.

Dupuis, Jean M., to Microsystems International, Limited. Transistor structure and method of manufacture. 3,750,271, Cl. 29-587.000.

Durand, Pierre, to Societe Anonyme, Richier. Yard jib crane. 3,750,895, Cl. 212-48.000.

Durand, Pierre; and Lartique, Gerard, to Hoffmann-La Roche Inc. Apparatus for reading while supporting information means. 3,751,641, Cl. 235-61.11c.

Dvacho, Daniel S.; and Fastabend, Patrick A., to Reynolds Metals Company. Apparatus for and method of inspecting container means. 3,750,877, Cl. 209-73.000.

Dybvig, Douglas H.: *See—*
Wright, Charles D.; Zollinger, Joseph La Mar; Mitsch, Ronald A.; and Dybvig, Douglas H., 3,751,312.

Dyczynski, Karol T., to Hanley Development Corporation. Segmental self-supporting beams conveyor and combination bed and conveyor. 3,750,863, Cl. 198-189.000.

Dykoski, Walter J. Three-dimensional board game apparatus. 3,751,039, Cl. 273-131.0ac.

Dymo Industries, Inc.: *See—*
McReynolds, Boone K.; and Haas, Fritz, 3,750,791.

Eastman Dental Center: *See—*
Mundorff, Sheila Ann; Biddy, Basil Glover; and Shrestha, Buddhi Man, 3,751,568.

Eastman Kodak Company: *See—*
Beach, David E., 3,750,545.
Bundschuh, John J.; and Roman, Robert J., 3,750,976.
Bunting, Leslie J., 3,750,975.
Chen, Fred F., 3,751,332.
Frazee, Jerome A.; and Murphy, Howard E., 3,751,154.
Harvey, Donald M., 3,751,256.
Hiller, Gary Lynn, 3,751,249.
Howe, Donald J.; and Hoppe, John C., 3,751,258.
Metzger, Lenard M., 3,751,580.
Negus, George T., 3,750,867.

Nerwin, Robert, 3,751,254.
Pickering, Royce D.; and Glassman, David M., 3,751,584.
Smith, Gale E.; and Hartman, Paul, 3,751,252.
Steele, John D., 3,750,907.
Surash, John J., 3,751,251.
Wilson, Burton D.; Haist, Grant M.; and Olivares, Ismael A., 3,751,255.
Zankowski, John S., 3,751,351.

Eaton, Douglas G.; Wacker, Wade L.; and Appleman, Theodore C., to Web Products, Inc. Scissors. 3,750,282, Cl. 30-254.000.

Eaton, William C., to Omsteel Industries, Inc. Speed control system for vehicle mounting a work performing device. 3,750,762, Cl. 173-8.000.

Ebner, Helmut; Stumer, Bernd; and Lang, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Device for delivering a measured charge of a flowable powder. 3,750,911, Cl. 222-254.000.

Ebrey, Roger George Anthony: *See*—
Dryden, Kerin Lee; and Ebrey, Roger George Anthony, 3,750,453.

Eckardt, Wolfgang; Tietjf, Rudolf; and Wolf, Victor, to Lever Brothers Company. Process for preparing scleroprotein-alkyl thiosulfate agents for the care of the hair. 3,751,564, Cl. 424-70.000.

Eckenbrecht, Robert Roy; and Rhee, Dong Woo, to GTE Sylvania Incorporated. Vertical synchronizing circuitry. 3,751,588, Cl. 178-7.30s.

Eckert, Alton B., Jr.: *See*—
Hubbard, David W.; and Eckert, Alton B., Jr., 3,750,565.

Ecodyne Corporation: *See*—
Tischler, Edward J., 3,751,233.

Ecuer, John H., to Amoco Production Company. Means for flow controlling hydraulic check valve. 3,750,700, Cl. 137-498.000.

Edkvist, Ake Evald. Apparatus for the manufacture of corrugated board. 3,751,325, Cl. 156-550.000.

Edwards, Bryant, to Illinois Tool Works Inc. Insect rearing tray. 3,750,625, Cl. 119-1.000.

Edwards, Floyd F. Chain links. 3,750,390, Cl. 59-78.000.

Edwards, Harrison F. Ionic wind machine. 3,751,715, Cl. 317-4.000.

Edwards, Samuel L. Aircraft with vertical take off and landing capability. 3,750,980, Cl. 244-12.00c.

Egger, Luis G.: *See*—
Lyons, Richard J.; and Egger, Luis G., 3,751,284.

Eggert, W. Keith, to Continental Oil Company, mesne. Nuclear reactor fuel element spacer assembly. 3,751,335, Cl. 176-78.000.

Egli, Werner H.; and Severson, Asbjorn M., to Honeywell Inc. Centrifugally driven spin device. 3,750,589, Cl. 102-79.000.

Egyt Gyogyszervegyeszeti Gyar: *See*—
Benko, Pal; Budai, Zoltan; Pallos, Laszlo; and Berenyi, Edit, 3,751,423.

Eicher, Karl: *See*—
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Einthoven, Willem Gerard; and Wheatley, Carl Franklin, Jr., to RCA Corporation. Semiconductor device employing Darlington circuit. 3,751,726, Cl. 317-235.00r.

Eisenwerk-Gesellschaft Maximilianshutte m.b.H.: *See*—
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, 3,751,242.

Eisler, Paul. Surface heating device. 3,751,629, Cl. 219-201.000.

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Elliott, Orrin M., to Great Canadian Oil Sands Limited. Freeze-thaw separation of solids from tar sands extraction effluents. 3,751,358, Cl. 208-17.000.

Ellis, Myron P.; and Gavasso, Richard J., to Micromatic Industries, Inc. Combined plating and honing method and apparatus. 3,751,346, Cl. 204-26.000.

Ellis, Robert C., Jr., to Sperry Rand Corporation. Rotational transducer using hall effect devices. 3,751,691, Cl. 310-10.000.

Ellis, Robert J.: *See*—
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Ellison, Donald E., to Inland Container Corporation. Container having improved bellows closure and blank for making same. 3,750,932, Cl. 229-37.00r.

Elman, Daniel L. Process for finishing steel bars. 3,750,438, Cl. 72-39.000.

Elmer, James W., to Inventors Engineering Inc. Continuous motion two part assembly machine. 3,750,256, Cl. 29-208.00b.

Eloranta, Vaito K.; and Shenk, Edwin K., to Polaroid Corporation. Focus responsive exposure control system. 3,750,543, Cl. 95-10.0ce.

Eltec, Inc.: *See*—
Kerr, Charles E., Jr., 3,751,611.

Elvrum, Don S. Curing and pretannage of hides. 3,751,221, Cl. 8-94.160.

Emelyaneko, July Georgievich: *See*—
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Energy Sciences Incorporated: *See*—
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Engelsmann, Dieter; and Karl, Horst, to Agfa-Gevaert AG. Photographic apparatus for use with percussive flash devices. 3,750,548, Cl. 95-11.00r.

Engineered Foam Plastics, Inc.: *See*—
Cook, John R., 3,750,871.

Engle, Thomas H., to General Signal Corporation. Deceleration controller for railway brake systems. 3,751,116, Cl. 303-20.000.

Enskat, Albert G., to Xerox Corporation. High speed labeling system. 3,751,324, Cl. 156-521.000.

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Erickson, Billy Arthur, to Procter & Gamble Company, The. Clear cooking and salad oils having hypocholesterolemic properties. 3,751,569, Cl. 424-173.000.

Erlenstaedt, Gunter, "Rhewum" Rheinische Werzeug-Machinenfabrik GmbH. Apparatus for producing high frequency vibrations of a sieve screen. 3,751,694, Cl. 310-29.000.

Erler, Gerhard: *See*—
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Errani, Deo; and Bucci, Roberto, to S.p.A. C.I.S.A.-Costruzioni Italiane Serrature Affini. Padlock with laminated body and removable cylinder. 3,750,432, Cl. 70-38.00r.

Erwin, Curtis L., Jr. Fuel measuring system for vehicles. 3,750,463, Cl. 73-113.000.

Espe Fabrik Pharmazeutischer Praparate GmbH: *See*—
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Evans, Jack L. Boat loader for vehicle. 3,750,812, Cl. 214-450.000.

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Eversteijn, Franciscus Cornelis; and Peek, Hermanus Leonardus, to U.S. Philips Corporation. Vapor deposition reactor. 3,750,620, Cl. 118-48.000.

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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Farris, Kenneth Barton. Process for producing yeast. 3,751,338, Cl. 195-82.000.

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Felix, Ernst, to Zellweger Ltd. Method of and an apparatus for determining the cross-section of products of the textile industry, especially that of yarns, rovings and slivers. 3,750,461, Cl. 73-67.500.

Feltman, James M. Fishing lure. 3,750,325, Cl. 43-42.140.

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Fishburne, Francis B. Refuse truck, 3,750,813, Cl. 214-518.000.

Fisher, Clarence E., to Advance Transformer Company. Ballast canister construction. 3,751,574, Cl. 174-52.00r.

Fisher, Colin. Counting systems in image analysis employing line scanning techniques. 3,751,585, Cl. 178-6.800.

Fisher, Evan D., to United States of America, Army. Fluid safety and arming system. 3,750,590, Cl. 102-81.000.

Fisher Gauge Limited: *See—*
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Fisher, William Frederick, to Fisher Gauge Limited. Materials handling device. 3,750,490, Cl. 74-469.000.

Fisher, William G. Reproduction system. 3,751,159, Cl. 355-20.000.

Fitch, John L.; and Jones, Lloyd G., to Mobil Oil Corporation. Method of forming and maintaining offshore ice structures. 3,750,412, Cl. 61-46.000.

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Folkerts, Walter E.; and Jamieson, Reginald Y., to Chrysler Corporation. Fluid coupling for high pressure spool valve hydraulic power steering gear. 3,751,002, Cl. 251-148.000.

Fonzi, Giorgio; Paleologo, Teo; and Toso, Giorgio, to Societe Italiana Resine S.p.A. Porometric materials. 3,751,329, Cl. 161-159.000.

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Forster, Jurg. Shuttle with improved means for securing bobbin-retaining clamp. 3,750,717, Cl. 139-207.000.

Foster, Alan D., to Dayton Steel Foundry Company, The. Leaf spring clamp and support. 3,751,021, Cl. 267-52.000.

Foster, George N.; and Sack, William, to Union Carbide Corporation. Method of biaxially stretching tubes of polyvinyl fluoride polymers. 3,751,531, Cl. 264-22.000.

Foster, George Wilbert: *See—*
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Fresard, Marcel, to Mefina S.A. Apparatus and carrying case assembly. 3,751,130, Cl. 312-244.000.

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Fujii, Masaya; and Ichihashi, Osamo, to Yashica Company, Ltd. Electric shutter operating circuit. 3,750,546, Cl. 95-10.0ct.

Fujii, Seiji; Kuwamoto, Hiroshi; Ishida, Masayuki; and Kamata, Masamoto, to Nippon Kabushiki Kaisha. Method and apparatus for controlling continuous tandem rolling mills. 3,750,437, Cl. 72-12.000.

Fujii, Seisuro; and Watanabe, Tsuyoshi, to Ono Pharmaceutical Co., Ltd. Novel guanidinocaproic acid phenyl esters and their production. 3,751,447, Cl. 260-473.00r.

Fujiso, Tokuo; and Ohmori, Tadashi, to Nippon Oil Company, Ltd. Catalyst for selective hydrogenation of acetylenic hydrocarbon in the concurrent presence of diolefin. 3,751,508, Cl. 260-677.00h.

Fujita, Keiichi, to Fujita Kenzo Kogyo Co., Ltd. Nail. 3,750,523, Cl. 85-28.000.

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Fulton, Theodore Alan, to Bell Telephone Laboratories, Incorporated. SNS supercurrent device. 3,751,721, Cl. 317-234.000.

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Gabel, Heinz; Hirschberg, Hans; and Lange, Gerhardt, to Messer Griesheim GmbH. Torch for thermochemical processing of work pieces. 3,750,957, Cl. 239-424.000.

Gabor, Andrew, to Diablo Systems, Incorporated. Moving coil motor with no stray flux. 3,751,693, Cl. 310-13.000.

Gabriels, Leonard, to Fraston (Hollinwood) Limited. Cutting apparatus for paper and like webs. 3,750,510, Cl. 83-305.000.

Gain Manufacturing Corporation: *See—*
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Gall, John S., to Celanese Corporation. Reinforced polyaklylene terephthalate moldingresin having reduced burning properties in thin sections. 3,751,396, Cl. 260-40.00r.

Galloway, James V. Method of forming a table from a single blank of heat-bendable sheet material. 3,751,317, Cl. 156-196.000.

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Gates, Thomas W.; Gates, Wesley R.; and Davis, Vayne R., to Gates, Thomas E., & Sons, Inc. Steam tunnels for treating logs and method of treatment. 3,750,303, Cl. 34-9.500.

Gates, Wesley R.: *See—*
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Gaudernack, Bjorn; Hannestad, Gunnar; and Hunderf, Ingleiv, to Forskmingsgruppe for Sjeldne Jordarter. Process for separating yttrium values from the lanthanides. 3,751,553, Cl. 423-21.000.

Gause, Raymond L.; and Spier, Raymond A., to United States of America, National Aeronautics and Space Administration. Tilting table for ergometer and for other biomedical device. 3,750,479, Cl. 73-379.000.

Gavasso, Richard J.: *See—*
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Geffner, Ted, to Barden Corporation, The. Segmental cage for linear and linear/rotary bearings. 3,751,121, Cl. 308-6.00c.

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Bohlinger, Arthur L.; and Miller, Richard H., 3,751,617.

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Geringer, Arthur V. Fail-safe means for solenoid actuated devices. 3,751,086, Cl. 292-144.000.

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Geurts, Cletus J. Hitch construction. 3,750,759, Cl. 172-285.000.

Ghadiali, Jaffer T., to Westinghouse Electric Corporation. Semi-recirculatory system for a clothes dryer. 3,750,304, Cl. 34-54.000.

Giacosa, Dante, to Sira Societa Industriale Reicerche Automotoristiche. Jet propulsion unit for boats. 3,750,614, Cl. 115-17.000.

Gidick, Ward F., to Koppers Company, Inc. Reversing mechanism for coke oven battery. 3,751,342, Cl. 202-141.000.

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Gilbert, Richard H., to Abex Corporation. Railroad brake shoes. 3,751,330, Cl. 161-165.000.

Gilchrist, Lee D. Knitting method. 3,750,427, Cl. 66-172.00r.

Giles, Charles E. Collet and collet fixture. 3,751,027, Cl. 269-152.000.

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Gleason, Donald M.; Bottaccini, Manfred R.; and Reilly, Robert J. Means for collecting specimens of urine. 3,750,648, Cl. 128-2.00f.

Gleichman, Robert F., to General Electric Company. Gas filled vertical dynamoelectric machine. 3,751,699, Cl. 310-90.000.

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Goade, James C.; McDonald, John A.; and Williamson, Herschel M., to Caterpillar Tractor Company. Hydraulic cylinder with self-locking end cap. 3,750,537, Cl. 92-165.000.

Gobel, Klaus. Bearing for supporting roof components above roof ceilings. 3,750,987, Cl. 248-1.000.

Gobert, Michel Rene Roger, to Colgate-Palmolive Company. Process of cleaning cloth. 3,751,222, Cl. 8-111.000.

Gobran, Ramsis; Knoepfel, Hanspeter; and Silver, Spencer F., to Minnesota Mining and Manufacturing Company. Cycloaliphatic and phenylalkyl acrylates and vinyl esters. 3,751,449, Cl. 260-486.00r.

Goeke, Alfons; Riedel, Franz; and Weck, Karl Gustav, to Kieserling, Th., & Albrecht. Adjusting mechanism for radially movable tools in rotary tubular tool holders of shaving machines for wire or the like. 3,750,497, Cl. 82-20.000.

Goell, James Emanuel, to Bell Telephone Laboratories, Incorporated. Method of selective multilayered etching. 3,751,248, Cl. 96-36.200.

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Golumev, Alexei Ivanovich; Gordeev, Vitaly Viktorovich; Goritsky, Boris Sergelvich; and Friedisman, Grigory Markovich. Face type sealing device. 3,751,046, Cl. 277-88.000.

Gomond, Gerard, to Essilor International Compagnie Generale d'Optique. Machining contact lenses of flexible material. 3,750,272, Cl. 29-558.000.

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Hoppstock, Frederic H.; Goodwin, Jeffrey A.; and Fregh, Kenneth J., 3,751,514.

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Gottliebson, Mayo; and Faes, Charles, to Flomatcher Co., Inc. Manometer control. 3,751,185, Cl. 417-7.000.
Gotz, Hans, to Daimler-Benz Aktiengesellschaft. Installation for prevention of draft in the interior space of motor vehicles. 3,750,555, Cl. 98-2.010.
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Graham, James F. Surgical dressing. 3,750,666, Cl. 128-156.000.
Gralenski, Nicholas M.; and Wada, George, to Watkins-Johnson Company. Convergent flow hollow beam X-ray gun with high average power. 3,751,701, Cl. 313-57.000.
Gramley, Robert A. Brake shoe cooling means. 3,750,854, Cl. 188-264.00r.
Granig, Hubert. Impact protector for automotive vehicles. 3,751,092, Cl. 293-73.000.
Grant Oil Tool Company 5 Underreamer having variable arm extension: *See—*
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Green, Basil Wayland, to Bateman, Edward L., Limited. Hydraulic solids conveyance. 3,751,186, Cl. 417-118.000.
Green, George E., to Banner Mining Company. Method of roasting copper sulphide concentrates and ores. 3,751,240, Cl. 75-1.000.
Green, Howard C. R. Door-operated vehicle boarding step. 3,751,068, Cl. 280-166.000.
Green, Patrick Hart; and Foster, George Wilbert, to Mond International, Limited. Method for making signs and other artistic works. 3,751,319, Cl. 156-242.000.
Green, William; and Heisler, Itzhak. Plug-in chamber furnace. 3,751,633, Cl. 219-390.000.
Greenburg, Jesse J. Mobile home porch. 3,750,351, Cl. 52-64.000.
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Greer, Edward M., to Crown Parking Products Co., mesne. Vertical-lift double-deck parking structure. 3,750,899, Cl. 214-16.1ec.
Greger, Georg, to Constantin Film GmbH. Copying cinematographic film. 3,751,144, Cl. 352-38.000.
Grego, Peter; and Howell, Robert G., to Corning Glass Works. Method of chemically strengthening a silicate article containing soda. 3,751,238, Cl. 65-30.000.
Gregory, Paul M., to Xerox Corporation. Fuser roll assembly. 3,751,216, Cl. 432-62.000.
Greiner, Hermann; and Lerch, Wolfgang, to Fernsch G.m.b.H. Sweep deflection linearization circuit. 3,751,707, Cl. 315-27.0td.
Greitzer, Melvin A., to Imperial Data Corporation. Restaurant booth with snap away back. 3,751,107, Cl. 297-455.000.
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Griebenow, Wolfgang, to Index-Werke K.G. Positioning arrangement, especially adjusting the feed stroke of a tool carrier in a machine tool. 3,750,618, Cl. 116-115.500.
Grienauer, Heinrich, to Siemens Aktiengesellschaft. X-ray topography apparatus. 3,751,662, Cl. 250-275.000.
Griggs, John O., Jr., to Burroughs Corporation. High speed print drum with traveling print hammer. 3,750,794, Cl. 197-49.000.
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Grosse, Wolfgang C. F. Stackable tray for temporarily storing documents or other items. 3,750,892, Cl. 211-128.000.
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Hagan, John Joseph; Keating, Kenneth Patrick; and Austin, Thomas Howard, to Jefferson Chemical Company, Inc. Integrated continuous process for olefin production. 3,751,518, Cl. 260-683.15d.
Hagemann, Gilbert M.; and Stremke, William F., Jr., to Reliance Electric Company, mesne. Automatic labeling machine with no label automatic stop. 3,751,321, Cl. 156-352.000.
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Hall, John B., to International Flavors & Fragrances Inc. Hydrogenated indane derivatives and processes for producing same. 3,751,500, Cl. 260-666.0py.

Hall, John N., to Hercules Incorporated. Orientation of tubing for a continuous process for making blow molded containers. 3,751,542, Cl. 246-99.000.

Hall, Richard H.; Haigh, Daniel H.; Derby, Robert L.; and Jennings, Walter E., to Dow Chemical Company, The. Valve and method for aqeuous systems. 3,750,688, Cl. 137-2.000.

Hall, Ronald David, to Allied Breweries (UK). Foam reduction during preparation of beer. 3,751,263, Cl. 99-31.000.

Hall, William Cornelius; and Peterson, John Merriam, to Chemtree Corporation. Self-supporting structures for nuclear radiation shields and binders therefor. 3,751,387, Cl. 252-478.000.

Hallerberg, Don M., to Hi-Tek Corporation. Push-switch with spring biased plunger. 3,751,618, Cl. 200-159.00r.

Hallett, Earl D. Signals for mail box. 3,750,939, Cl. 232-35.000.

Halliburton Services: *See—*
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Fischer, Adolf; Mueller, Albrecht; and Hansen, Guenter, 3,751,450.

Hansen, Niels S., to Foundation and Bridge Corporation. Side window brush arrangement for car washing installations. 3,750,213, Cl. 15-21.00d.

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Happ, Marvin B., to Texas Instruments Incorporated. Method of making lead frames for semiconductor devices. 3,750,277, Cl. 29-624.000.

Hara, Junji; Nakazima, Yoshiharu; and Honjo, Yoshitoshi, to Mitsui Toatus Chemicals, Incorporated. Rapid anionic polymerization of vinyl aromatic monomers. 3,751,403, Cl. 260-88.20c.

Hardison, Artsun P., to XAR Industries Incorporated. Solenoid operated valve. 3,750,693, Cl. 137-219.000.

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Hare, Paul N., to Cities Service Company. Pelletizing process. 3,751,543, Cl. 264-117.000.

Haregger, James D.: *See—*
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Hargett, Wyatt P., Jr.: *See—*
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Harrell, Larry D., to Lillston Corporation. Crop directing disc and/or assembly. 3,750,865, Cl. 198-211.000.

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Harrison, Robert Henry; Russell, John Patrick; and Middleton, Anthony Edward, to Davy and United Engineering Company, Limited. Forging control. 3,750,436, Cl. 72-8.000.

Hart, Thomas William, Jr., to Macrodata Company. Memory system exerciser. 3,751,649, Cl. 235-153.0ac.

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Harting, Ernst-Heinrich, to Hermle, Franz, & Sohn. Pendulum controlled electrodynamic clockwork. 3,750,386, Cl. 58-30.000.

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Harvey, Donald M., to Eastman Kodak Company. Fluid receiving means. 3,751,256, Cl. 96-76.00c.

Harzer, Peter, to Wandel u Goltermann. Sweep circuit for oscilloscope. 3,751,708, Cl. 315-22.000.

Haselmann, Severin, to Aga AB. Burner nozzle. 3,750,958, Cl. 239-419.300.

Hasenbank, Kenneth N.: *See—*
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Hashimoto, Mashanao: *See—*
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Haub, John T.: *See—*
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Haubtmann, Henri, to Bayer Aktiengesellschaft. Bait box for rats and mice. 3,750,326, Cl. 43-131.000.

Hauck, Frederic P.; Sundeen, Joseph E.; and Reid, Joyce A., to Squibb, E. R., & Sons, Inc. Monoolmonoene amines. 3,751,420, Cl. 260-293.560.

Hauni-Werke Korber & Co. KG: *See—*
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Kruse, Friedel; Wahle, Gunter; Erdmann, Otto; and Rudszinat, Willy, 3,750,676.

Hauser, Raimund: *See—*
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Buchacher, Ernest Robert, 3,750,726.

Hawkins, Donald B. Foot operated patio door lock. 3,751,087, Cl. 292-170.000.

Hayao, Shin: *See—*
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Hayashi, Hihiro: *See—*
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Hayashi, Masaharu, to Aisin Seiki Kabushiki Kaisha. Fan for cooling automotive vehicle engine. 3,751,181, Cl. 416-132.000.

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Hayes, John C., to Universal Oil Products Company. Regeneration of a coke-deactivated bimetallic catalyst. 3,751,379, Cl. 252-415.000.

Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., to Universal Oil Products Company. Hydrocarbon isomerization process. 3,751,502, Cl. 260-668.00a.

Hayhurst, George; and Moran, Eric. Windshield wiper clip assemblies. 3,750,227, Cl. 15-250.320.

Hayner, Paul F., to Sanders Associates, Inc. Variable fluid orifice. 3,750,710, Cl. 138-40.000.

Hays, Eric L., to AMU Company. Accelerometer. 3,750,481, Cl. 73-515.000.

Hays, Gordon W., to AMF Incorporated. Automatic grader. 3,750,882, Cl. 209-111.600.

Hazzard, Harry I., to McCulloch Corporation. Process for impregnating electrical components. 3,751,549, Cl. 264-272.000.

Hebert, Victor F., to Houdaille Industries, Inc. Energy storing recoverable bumper system. 3,751,093, Cl. 293-89.000.

Heck, Richard F., to Hercules Incorporated. Preparation of aryl-substituted acetylenic compound. 3,751,446, Cl. 260-469.00r.

Hedrick, John R., to Minnesota Mining and Manufacturing Company, mesne. Surgical cutting tool adapter apparatus. 3,750,671, Cl. 128-305.000.

Heede, Konrad; and Bender, Peter, to Rheinmetall GmbH. Spin-stabilized projectile. 3,750,575, Cl. 102-69.000.

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Heftman, George, to Rank Organisation Limited, The. Cryogenic device for cooling objects. 3,750,414, Cl. 62-55.000.

Hegler, Wilhelm. Process of forming plastic tubing which is partially corrugated. 3,751,541, Cl. 264-90.000.

Hehl, Karl. Apparatus for injection molding. 3,751,203, Cl. 425-190.000.

Heierli, Werner; and Amberg, Rudolf. Tunnel construction method. 3,750,407, Cl. 61-42.000.

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Heinenmann, Rolf. Clutch or brake. 3,750,788, Cl. 192-107.00r.

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Henry, James, to Emhart Corporation. Refrigerated display case. 3,751,653, Cl. 240-6.000.
Hensen, Friedhelm; Siemetzki, Hans; and Gathmann, Egon, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Screw extruder with radially projecting pins. 3,751,015, Cl. 259-191.000.
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Hester, Jackson B., Jr., to Upjohn Company, The. 1-Substituted-6-phenyl-7H-s-triazolo(4,3-a) (1,6)benzodiazepine compounds. 3,751,426, Cl. 260-308.00r.
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Heywang, Walter: *See—*
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Hikido, Tsutomu; and Moyer, Craig R., to United States of America, Atomic Energy Commission. Flow control of filler alloy. 3,750,266, Cl. 29-490.000.
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Hiller, Gary Lynn, to Eastman Kodak Company. Photothermic silver halide element containing a bis-beta-naphthol reducing agent and a 1, 3-dihydroxybenzene reducing agents. 3,751,249, Cl. 96-50.00r.
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Hoffman, Paul R., to Burroughs Corporation. Format control tape cartridge and mounting assembly therefor. 3,750,919, Cl. 226-9.000.
Hoffman, Simon J. Blade attachment means for saber saw assembly. 3,750,283, Cl. 30-338.000.
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Holme, Bent Melchior Karlsen, to Danfoss A/S. Sound absorber for compressors. 3,750,840, Cl. 181-57.000.
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Hordberg, Birger. Lighting system for vehicles. 3,751,659, Cl. 240-71.000.

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Hughes, Nathaniel, to Energy Sciences Incorporated. Atomizing nozzle assembly. 3,750,947, Cl. 239-11.000.

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Huseman, Francis R. Tread frame and detachable drive sprocket support. 3,750,779, Cl. 180-9.620.

Husome, Robert G.; and Sweet, John R., III, to Aerotherm Corporation. Color sorter. 3,750,881, Cl. 209-74.00r.

Huspen, Fred J. Collapsible rake. 3,750,379, Cl. 56-400.180.

Hutson, Thomas, Jr.; and Carter, Cecil O., to Phillips Petroleum Company. Recovery of alkyl fluoride in alkylation of isoparaffin with ethylene and a higher olefin promoter. 3,751,517, Cl. 260-683.480.

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Hyland, Thomas J. Tongue guard for horses. 3,750,368, Cl. 54-8.000.

Ichihashi, Osamo: *See—*
Fujii, Masaya; and Ichihashi, Osamo, 3,750,546.

ICI America Inc.: *See—*
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Ideal Toy Corporation: *See—*
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Igarashi, Yoshiaki; Kobayashi, Kazutsugu; and Matsumoto, Hisayuki, to Matsushita Electric Industrial Co., Ltd. Current control circuit for a plurality of loads. 3,751,676, Cl. 307-31.000.

Iglehart, Hilary H.: *See—*
Iglehart, Jesse H.; and Iglehart, Hilary H., 3,750,261.

Iglehart, Jesse H.; and Iglehart, Hilary H., to Rodco, Inc. Means for modifying sucker rod. 3,750,261, Cl. 29-427.000.

Ihepaut, Pierre: *See—*
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Owen, Ronald C., 3,751,098.
Pomernacki, Henry, 3,750,206.
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Imoehl, Wolfgang; and Borner, Peter, to Schering AG. Preparation of cyanacrylic acid esters. 3,751,445, Cl. 260-465.400.

Imperial Chemical Industries Limited: *See—*
Bowden, Roy Dennis, 3,751,422.
Dodman, David; Wilkins, Malcolm; and Woolley, John Mathers, 3,751,490.
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Imperial-Eastman Corporation: *See—*

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Inamoto, Yoshiaki; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, to Kao Soap Co., Ltd. Process for producing adamantyl esters of polyhydric alcohols. 3,751,452, Cl. 260-468.00g.

Inamoto, Yoshiaki; Nakayama, Horokazu; and Takenaka, Hidetsugu, to Kao Soap Co., Ltd. Method of producing 1,3-bis (carboxymethyl-adamantanes. 3,751,455, Cl. 260-514.00g.

Inamoto, Yoshiaki; Nakayama, Hirokazu; and Kadono, Takeji, to Kao Soap Co., Ltd. Tricyclic secondary phosphite esters. 3,751,528, Cl. 260-956.000.

Index-Werke K.G.: *See—*
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Industrial Woodworking Machine Company, Inc.: *See—*
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Industrilaboratoriet Aktienbolag: *See—*
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Ingersoll-Rand Company: *See—*
Lindeboom, Herman, 3,751,045.

Inland Container Corporation: *See—*
Ellison, Donald E., 3,750,932.

Innes, Robert; and West, Norman, to Trist, Ronald, Controls Limited. Float switches. 3,751,616, Cl. 200-84.00c.

Inose, Fumiyuki; Takahashi, Masahiro; and Aida, Takemi, to Hitachi, Ltd. Breakable collision detecting element for automobiles. 3,751,613, Cl. 200-61.080.

Inoue, Masakazu: *See—*
Okasaka, Hotuma; Okamoto, Takehiko; Hirai, Toshimasa; Inoue, Masakazu; and Asama, Akira, 3,751,526.

Inoue, Mutsuhiro; and Takahashi, Yoichi, to Camon Kabushiki Kaisha. Photographic contact printing device. 3,751,165, Cl. 355-108.000.

Inoue, Shiro, to Kabushiki Kaishyo Inoue Seisakushyo. Combination of musical box and odometer for a bicycle. 3,750,520, Cl. 84-94.00c.

Insler, Julius R.; Leslie, Allen R.; and Vigneri, Ronald J., to Saxon Industries, Inc., mesne. Laser printing system. 3,751,587, Cl. 178-6.60r.

Institute for Cancer Research, The: *See—*
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International Basic Economy Corporation: *See—*
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Ishida, Masayuki: *See—*
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Ishida, Minoru: *See—*
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Ishida, Yoshikatsu, to Nippon Gakki Seizo Kabushiki Kaisha. Ski binding. 3,751,055, Cl. 280-11.35t.

Ishii, Katsuyuki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Semiconductor strain sensitive element of predetermined temperature coefficient of resistance and method of making same. 3,750,270, Cl. 29-580.000.

Ishimaru, Wataru: *See—*
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Itek Corporation: *See—*
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Ito, Shin; Kubo, Seitoku; Hashimoto, Mashanao; and Hayashi, Hihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control system for automatic transmission. 3,750,495, Cl. 74-866.000.

Ivanov, Alexandr Pavlovich; and Romanov, Rudolf Alexeevich. Device for spherical turning. 3,750,496, Cl. 82-12.000.

Ivanova, Irina Dmitrievna: *See—*
Fridman, Georgy Nikolaevich; Fialkov, Abram Samuilovich; Davidovich, Yakov Gilievich; Ivanova, Irina Dmitrievna; Sysoeva, Ljudmila Petrovna; Gluskin, Abram Ykovlevich; Galiskarov, Rimm Zigangirovich; Liberman, Esfir Lvovna; and Pomortseva, Vera Stepanovna,3,751,294.

Izumitani, Tetsuro; and Masuda, Isao, to Hoya Glass Works. Colorless P_2O_5 glass with anomalous dispersion in short wavelength region. 3,751,272, Cl. 106-47.00q.

Jackman, Dennis: *See—*
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Jackson, Herman E.: *See—*
Livingston, James M., 3,750,756.

Jackson, William J. Unloader for storage bins. 3,750,807, Cl. 214-152.000.

Jacobs Manufacturing Company, Limited, The: *See—*
Derbyshire, George C., 3,751,052.

Jacobs, Miles H. Refuse can holder. 3,750,990, Cl. 248-146.000.

Jacobs, Roger E.: *See—*
Morley, Edwin R.; and Jacobs, Roger E., 3,751,697.

Jacobson, Sol H.; and Gorsuch, Donald R., to Sanders Associates, Inc. Tension turnbuckle. 3,751,083, Cl. 287-60.000.

Jacquemet, Andre, to Battell Memorial Institute and Dunlop Limited. Rail joints. 3,750,946, Cl. 238-226.000.

Jade Corporation: *See—*
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Jadoiss, Donald B. G.: *See—*
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Jaeger, Hannes. Redundant pulse supply system. 3,751,685, Cl. 307-219.000.

Jaffre, Felicien. Automatic discharge trays. 3,750,860, Cl. 198-144.000.

Jager, Georg; Geiger, Rolf; and Muschaweck, Roman, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Basically substituted isobornyl urethanes. 3,751,448, Cl. 260-482.00c.

Jakob, Horst, to Societe Financiere Francaise de Licences et Brevets. Process for the making of slide fasteners, means for carrying out this process and fastener chain made by said process. 3,750,260, Cl. 29-408.000.

James, Howard Lee: *See—*
Dunder, David N.; and James, Howard Lee, 3,751,059.

James, Michael: *See—*
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Jamieson, Reginald Y.: *See—*
Folkerts, Walter E.; and Jamieson, Reginald Y., 3,751,002.

Janik, Walter E., to Addressograph-Multigraph Corporation. Spring biased axially shifting platen roller in a traveling cylinder imprinter. 3,750,569, Cl. 101-269.000.

Jankowski, Stanislaw: *See—*
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Japanese National Railways: *See—*
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Jaquiss, Donald B. G.: *See—*
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Jason, John J. Method of making a composite picture transparancy. 3,750,541, Cl. 95-18.00r.

Jefferson Chemical Company, Inc.: *See—*
Hagan, John Joseph; Keating, Kenneth Patrick; and Austin, Thomas Howard, 3,751,518.

Jeffrey, William B., to Westinghouse Air Brake Company. Draft gear having emergency release means. 3,750,896, Cl. 213-75.00r.

Jeffries, Sampson F.: *See—*
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Jennings, Henry George Frederick. Article vending machine having bonus dispensing means. 3,750,829, Cl. 221-8.000.

Jennings, Marvin D.: *See—*
Lech, Richard J.; Ziskal, Joseph F.; Jennings, Marvin D.; Orth, Harold R.; and Virtue, Eugene P., 3,750,405.

Jennings, Walter E.: *See—*
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Jensen, Arthur B. Fishing rod holder. 3,750,918, Cl. 224-5.00e.

Jensen, Jens S.; Hamrock, Edward M.; and Lookabaugh, Clair E., to Enterprise Wire Products, Inc. Binning arrangement. 3,750,894, Cl. 211-184.000.

Jenvey, Leslie Richard; and Millard, Barry John, to Adwest Engineering Limited. Steering arrangements for motor vehicles. 3,750,835, Cl. 180m79.20r.
Jepson, Robert M., to Ramsey Steel Company, Inc. Horizontal metalworking machine. 3,750,454, Cl. 72-441.000.
Jochum, Peter: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dietrich, 3,751,395.
Jodoin, Joseph J. L. Smoking pipe and method of manufacture. 3,750,677, Cl. 131-172.000.
Joffe, Edward Mattnew: *See—*
Baier, Frederick Lawrence; and Joffe, Edward Mattnew, 3,751,287.
Johannes, Conrad; deceased (by Johannes, Marie Jose; administrator); Carbonnel, Emile; Sauty, Pierre; and Grenier, Maurice, to L'Air Liquide, Societe Anonyme pour d'Etude et l'Exploitation des Procedes Georges Claude. Method of generation of frigorific enegy and a refrigerator utilizing said method. 3,750,417, Cl. 62-114.000.
Johannes, Marie Jose: *See—*
Johannes, Conrad; Carbonnel, Emile; Sauty, Pierre; and Grenier, Maurice, 3,750,417.
Johansson, Bengi Henri, to Aktiebolaget Bofors. Circuit system for compensating the influence of the back-ground radiation on the picture display in an infra-red camera. 3,751,586, Cl. 178-7.100.
Johne, Hans; and Graupner, Eberhard, to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Austustungen. Device for cleaning color stirrer and color chests of printing machines. 3,750,570, Cl. 101-364.000.
Johnsen, Carsten Ingeman. Generating alternating and direct electric currents by modified fuel cells. 3,751,302, Cl. 136-86.00e.
Johnson & Johnson: *See—*
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Johnson, Darrel D.: *See—*
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Johnson, Donald R., to Cincinnati Milacron-Heald Corporation. Machine tool. 3,750,343, Cl. 51-50.00r.
Johnson, Elling Z.: *See—*
Back, John H.; Johnson, Elling Z.; Kranc, Stanley J.; and McDowell, Robert D., 3,750,960.
Johnson, Eugene. Transformer mounting assembly. 3,750,992, Cl. 248-221.000.
Johnson, Floyd O., to Varian Associations. Electrographic printer. 3,751,157, Cl. 355-3.000.
Johnson, George A., to Johnson Products Company, Inc. Spirit level with clamping action. 3,750,301, Cl. 33-379.000.
Johnson, Glenn H.: *See—*
Taylor, Marvin A.; Johnson, Glenn H.; and Becker, H. Jack, 3,751,111.
Johnson, Ingolf B.; and Mitchell, Graham R., to General Electric Company. Protective equipment for a series capacitor. 3,751,716, Cl. 317-12.00a.
Johnson, Marvin M.: *See—*
Rohde, Raymond; and Johnson, Marvin M., 3,751,363.
Johnson, Philip C., to Wells Aluminum Corporation. Awning window assembly. 3,750,336, Cl. 49-371.000.
Johnson Products Company, Inc.: *See—*
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Johnson, Robert E., to Whirlpool Corporation. Vacuum cleaner structure. 3,750,222, Cl. 15-416.000.
Johnson, Robert P. Means and technique for removing flux on a welding rod. 3,750,348, Cl. 51-391.000.
Johnson, Walter E.: *See—*
Cannon, David C.; Johnson, Walter E.; and Turnage, Richard W., 3,751,196.
Jokiel, Theodor; and Bracht, Karl, to Clag Dominit Aktiengesellschaft. Apparatus for producing clean air. 3,750,558, Cl. 98-40.00d.
Jonas, Gerhard: *See—*
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Jones, Clarence O., Jr., to Niagara Machine & Tool Works. Shiftable multiple roll forming apparatus. 3,750,446, Cl. 72-181.000.
Jones, Harold H.: *See—*
Jones, Robert L.; and Jones, Harold H., 3,751,097.
Jones, Hugh F., to Federal-Mogul Corporation. Electroplating cell including magnetic means to couple concave workpieces to a plating rack. 3,751,354, Cl. 204-198.000.
Jones, Lawrence Temple: *See—*
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence Temple, 3,750,330.
Jones, Lloyd G.: *See—*
Fitch, John L.; and Jones, Lloyd G., 3,750,412.
Jones, Peter, to Girling Limited. Fluid level indicating devices with pull to test feature. 3,751,614, Cl. 200-84.00c.
Jones, Robert L.; and Jones, Harold H. Adjustable engine lift. 3,751,097, Cl. 294-78.00a.
Jones, Waymond R., to Pullman Incorporated. Railway car corner construction. 3,750,352, Cl. 52-282.000.
Jordan, Andrew Stephen: *See—*
Derick, Lincoln; Jordan, Andrew Stephen; and Verleur, Hans Willem, 3,751,309.
Jordan, William F., Jr., to Honeywell Inc. Memory selection apparatus. 3,751,681, Cl. 307-215.000.
Jouffret, Michel: *See—*
Brunie, Jean-Claude; Constantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,751,480.
Jukes, Norman Alfred, to Lucas, Joseph, (Industries) Limited. Ignition distributor cap with isolated capacitor and resistor. 3,751,609, Cl. 200-19.0dc.
Jureit, John Calvin, to Automated Building Components, Inc. Fluid-actuated press. 3,750,562, Cl. 100-100.000.
Juster, Robert W., to Affiliated Hospital Products, Inc. Packaged catheter arrangement. 3,750,875, Cl. 206-63.20r.
Jutzi, Wilhelm, to International Business Machines Corporation. Integrated semiconductor circuit for data storage. 3,751,687, Cl. 307-279.000.
K&M Enterprises, Incorporated: *See—*
Cook, Henry D., 3,750,686.
Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kadono, Takeji: *See—*
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Kahl, Eberhard, to Bosch, Robert, GmbH. Automatically steered self-propelled vehicle. 3,750,833, Cl. 180-79.100.
Kaiser, Charles William, Jr., to Bell Telephone Laboratories, Incorporated. Loop fault locator. 3,751,606, Cl. 179-175.300.
Kakijima, Todomu: *See—*
Ohtani, Yoshio; and Kakijima, Todomu, 3,750,633.
Kakizawa, Kouji, to Kabushiki Kaisha Suwa Seikosha. Quartz-oscillator controlled timepiece using liquid crystal display device. 3,750,383, Cl. 58-50.00r.
Kalle Aktiengesellschaft: *See—*
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Ruckert, Hans; Kramer, Heinz; and Agustein, Gustav, 3,751,285.
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Kalmar Verkstadsakiebolag: *See—*
Holmberg, Bengt Roland; and Petersson, Ralf Krister Ebbe, 3,751,060.
Kalwaites, Frank, to Johnson & Johnson. Method and apparatus (discontinuous imperforate portions on backing means of open sandwich). 3,750,236, Cl. 19-161.00p.
Kalwaites, Frank, to Johnson & Johnson. Method for producing nonwoven fabrics having a plurality of patterns. 3,750,237, Cl. 19-161.00p.
Kamata, Masamoto: *See—*
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Kamineski, Conrad W.; and Merkley, Joseph H., to Lithium Corporation of America. Telomerization reactions utilizing liquid hydrocarbon solutions of certain organometallic complexes. 3,751,501, Cl. 260-668.00b.
Kamlet, Mortimer J.: *See—*
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Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan, 3,750,857.
Kaneko, Ryuichi: *See—*
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Kanno, Iwau; Yoshioka, Junichi; and Fuzio, Sumito, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for treating an aqueous solution of crude sodium chloride. 3,751,559, Cl. 423-158.000.
Kao Soap Co., Ltd.: *See—*
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Inamoto, Yoshiaki; Nakayama, Horokazu; and Takenaka, Hidetsugu, 3,751,455.
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Karass, Hans-Joachim; and Kroger, Heinz, to Holstein & Kappert Maschinenfabrik. Conveying device. 3,750,801, Cl. 198-43.000.
Karl, Horst: *See—*
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Karlheinz, Hammelmann: *See—*

Angelini, Antonio; Handel, Hubert; Landwehr, Heinz; Karlheinz, Hammelmann; Schoning, Josef; Schwenk, Bernd; and Huck, Gerhard, 3,751,336.

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Karlson, Eskil L., to Pollution Control Industries, Inc. Sterilizing with liquid spray containing ozone. 3,751,225, Cl. 21-91.000.

Kartiganer, Norman, to Kartiganer, Norman, Inc. Combination carrying case and wig stand. 3,750,869, Cl. 206-8.000.

Kartiganer, Norman, Inc.: *See—*
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Kasemeier, Rolf; and Mehr, Karl Gunter, to Minox GmbH. Optische und Feinmechanische Werke. Still camera with an electronically controlled shutter and a receiver for a photo-flash device. 3,750,550, Cl. 95-11.001.

Kass, Gerald H., to Anderson Brass Company. Fluid valve. 3,751,003, Cl. 251-312.000.

Kast, Howard B., to United States of America, Army. High speed overspeed sensor. 3,750,482, Cl. 73-521.000.

Kato, Toshio: *See—*
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Kauranen, Herbert A., to Kelvinator, Inc. Oven and control circuit therefor. 3,751,632, Cl. 219-492.000.

Kawabata, Kazuharu: *See—*
Kawakami, Hiroshi; Satoh, Hideshi; Miyoshi, Akira; Kawabata, Kazuharu; and Kimura, Kohkichi, 3,751,547.

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Kawai, Kakutaro: *See—*
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Kawai, Nobumi: *See—*
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Kawakami, Hiroshi; Satoh, Hideshi; Miyoshi, Akira; Kawabata, Kazuharu; and Kimura, Kohkichi, to Unitika Limited. Process for producing high modules polyvinyl alcohol synthetic fibers. 3,751,547, Cl. 264-210.00f.

Kawasaki, Kikuo; and Oose, Katsuhiro, to Fuji Denki Deizo Kabushiki Kaisha. Circuit breaker device. 3,751,678, Cl. 307-136.000.

Kay, Albert Ernest; and Clark, Arthur Wellesley Stewart, to Aluminium Foils Limited. Manufacture of electrical coils. 3,750,275, Cl. 29-605.000.

Kay, Edward L.; Roberts, Durward T., Jr.; Calihan, Lawrence E.; and Wakefield, Lynn B., to Firestone Tire & Rubber Company, The. Isomerization of z-butyne to 1,2-butadiene. 3,751,511, Cl. 260-680.00r.

Kayabakogyo Kabushikikaisha: *See—*
Murato, Kenichi; Maruyama, Yasuo; Wakao, Mitsuro; Takahashi, Shogo; and Takami, Hisao, 3,750,897.

Kaynar Mfg. Co., Inc.: *See—*
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Kearney, Patrick. Wine pourer and resealer. 3,750,915, Cl. 222-567.000.

Keating, Kenneth Patrick: *See—*
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Keene Corporation: *See—*
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Keene, William A., to Phillips Petroleum Company. Sampling apparatus. 3,750,478, Cl. 73-423.00r.

Keister, Robert O.: *See—*
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Kellems, Kenneth K.: *See—*
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Keller, Wolfgang: *See—*
Reuschel, Konrad; Kersting, Arno; and Keller, Wolfgang, 3,751,539.

Kellwood Company: *See—*
Stringer, Myron Scott; Smith, Daniel W.; Mac Ivergan, Robert G.; and Eidenbaum, Robert W., 3,750,916.

Kelsey, Paul S., to Susquehanna Corporation, The. Apparatus for casting slab-faced panels. 3,751,201, Cl. 425-123.000.

Kelvinator, Inc.: *See—*
Kauranen, Herbert A., 3,751,632.

Kempler, Ernest. Small article display rack. 3,750,893, Cl. 211-162.000.

Kendall Company, The: *See—*
Collins, Robert F., 3,750,664.
Patel, Bhupendra C., 3,750,914.

Kendall Company, The, mesne: *See—*
Collins, Robert F., 3,750,663.
Samour, Carlos M.; and Richards, Mildred C., 3,751,451.

Kendall, Giles A.; and Wallace, William D., to Miner Enterprises, Inc. Shock absorber. 3,751,020, Cl. 267-33.000.

Kennard, Ronald Lester: *See—*
Moscony, John Joseph; and Kennard, Ronald Lester, 3,751,250.

Kennedy, David P.: *See—*
Duckler, Sheldon; Kennedy, David P.; and Norland, Kenneth S., 3,751,656.

Kennedy, Edwin K.; and Latzko, Richard I., to Pratt & Whitney Inc. Turret lathe. 3,750,245, Cl. 29-39.000.

Kennedy, Melvin R.: *See—*
Bartok, Stephen; Kennedy, Melvin R.; Klose, George J.; Landsinger, Edmund E.; and Stewart, George W., 3,751,573.
Willinger, Allan H.; and Kennedy, Melvin R., 3,751,188.

Kenworthy, Grant F. Adjustable, pressure compensating shock absorber/buffer. 3,750,856, Cl. 188-287.000.

Keown, Philip E.; Meyers, Clyde C.; and Wetherold, Robert G., to Mobil Oil Corporation. Vapor-phase alkylation in presence of crystalline a luminosilicate catalyst with separate transalkylation. 3,751,504, Cl. 260-672.00t.

Kerr, Charles E., Jr., to Eltec, Inc. Electrical switch assembly with tension-transmitting insulator. 3,751,611, Cl. 200-48.00r.

Kersting, Arno: *See—*
Reuschel, Konrad; Kersting, Arno; and Keller, Wolfgang, 3,751,539.

Kesler, George H.: *See—*
Carpenter, James F.; McCrary, Leon E.; Steube, Kenneth E.; Klein, Albert A., Jr.; and Kesler, George H., 3,750,623.

Keyes, Robert A. Removable vehicle window cover. 3,751,100, Cl. 296-95.00c.

Khasin, Kim Moiseevich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.

Khcheian, Khachik Egorovich; Revenko, Olga Mikhailovna; and Shatalova, Alla Nikolaevna. Method of producing acrylonitrole. 3,751,443, Cl. 260-465.900.

Kiam, Nonna Fedorovna: *See—*
Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Kiam, Nonna Fedorovna; Sobolev, Valerian Mikhailovich; and Ponomarenko, Vladimir Ivanovich, 3,751,509.

Kieserling, Th., & Albrecht: *See—*
Goeke, Alfons; Riedel, Franz; and Weck, Karl Gustav, 3,750,497.

Kietz, Lothar, to Kabelschlopp Gesellschaft mit beschrankter Haftung. Device for protecting the guiding path of a machine tool. 3,751,120, Cl. 308-3.00a.

Kilduff, Timothy J., to United States of America, Army. Reserve battery electrodes using bonded active materials. 3,751,301, Cl. 136-26.000.

Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; and Mitsuo, Kyoto, to Unitaka Ltd. Apparatus for supplying weft yarns. 3,750,716, Cl. 139-122.000.

Kimura, Kazuo: *See—*
Tanaka, Katsunobu; Kimura, Kazuo; and Yamamoto, Masaki, 3,751,337.

Kimura, Kohkichi: *See—*
Kawakami, Hiroshi; Satoh, Hideshi; Miyoshi, Akira; Kawabata, Kazuharu; and Kimura, Kohkichi, 3,751,547.

Kimura, Takashi; Hamamoto, Hiroshi; Majima, Azusa; Awano, Yoji; Inaguma, Yukio; and Tomatsu, Mitsuo, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Sintered filter having straight holes therethrough. 3,751,271, Cl. 106-40.00r.

Kimura, Yoshitomo: *See—*
Inamoto, Yoshiaki; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kimura, Yoshitomo, 3,751,452.

Kindl, George F.; and Michaud, Orean E., to Pratt & Whitney Inc. Precision measuring device having two scales. 3,750,296, Cl. 33-166.000.

Kinetics Corporation: *See—*
Minto, Wallace L.; and Keller, Leonard J., 3,750,393.

King, Graham Garton, to Societe PIV. Automatic chain or belt re-tensioning device for variable-speed drive. 3,750,487, Cl. 74-252.800.

Kingston, George W., to Timber Engineering Company. Sill plate anchor device. 3,750,360, Cl. 52-714.000.

Kinley, John C.: *See—*
Kinley, John C.; Agee, Charles W.; and Fowler, Charles N. (said Agee and said Fowler assors. to), 3,750,748.

Kinley, John C.; Agee, Charles W.; and Fowler, Charles N., said Agee and said Fowler assors. to Kinley, John C. Liner separation apparatus. 3,750,748, Cl. 166-55.000.

Kinoshita, Kazuhisa: *See—*
Mimino, Tohru; Kinoshita, Kazuhisa; Minegishi, Isao; and Shinoda, Takayuki, 3,751,244.

Kintish, Irving L.; and Marcus, Irwin, to United States of America, Army. Projectile with differential tandem shaped charges. 3,750,582, Cl. 102-56.000.

Kirchhoff, Kurt. Variable focal length anamorphotic cinecamera systems. 3,751,136, Cl. 350-181.000.

Kirin Beer Kabushiki Kaisha, a/k/a Kirin Brewery Co., Ltd.: *See—*
Kuroiwa, Yoshiro; Kokubo, Eiichi; Aramaki, Koichiro; and Uehara, Hiroshi, 3,751,266.

Kirkpatrick, William J.: *See—*
Carmichael, Thomas F.; Maier, Richard J.; and Kirkpatrick, William J., 3,751,710.
Kishpaugh, Allan; and Hagen, Donald J., to Standard Packaging Corporation. Method of packaging granular material. 3,750,362, Cl. 53-22.00a.
Kisner, Walter M.: *See—*
DiBenedetto, Joseph D.; and Kisner, Walter M., 3,751,313.
Kitchel, Fred L., to United States Steel Corporation. Annealing furnace seal. 3,751,219, Cl. 432-257.000.
Kittl, Emil, to United States of America, Army. Energy conversion system. 3,751,303, Cl. 136-89.000.
Klaus, Kaspar. Garage for the storage of vehicles. 3,750,808, Cl. 214-16.1ed.
Klein, Albert A., Jr.: *See—*
Carpenter, James F.; McCrary, Leon E.; Steube, Kenneth E.; Klein, Albert A., Jr.; and Kesler, George H., 3,750,623.
Klein, Jacob: *See—*
Reed, Jerry A.; Van Delden, Ronald; Maruko, Shuji U.; Garner, George E.; Ryan, Stanley; Waring, Winfred F.; Klein, Jacob; Schmidt, Herman W., Jr.; and Friedrich, Simon, 3,750,529.
Klein, Norman E., to Deering Milliken Research Corporation. Coating apparatus. 3,750,923, Cl. 226-112.000.
Kleiner, Hans-Jerg; and Rosinger, Sigurd, to Farbwerke Hoeschst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of 2-chlorethane-phosphonic acid dichloride. 3,751,353, Cl. 204-158.0he.
Klemme, Kurt, to Hauni-Werke Korber & Co. KG. Method and apparatus for the production of tobacco rods. 3,750,675, Cl. 131-21.00b.
Klenosky, Robert: *See—*
Phillips, Morton; and Klenosky, Robert, 3,750,307.
Klinkhamir, Jacob Fridrik: *See—*
Brandsma, Johan Rudolf; Klinkhamir, Jacob Fridrik; and Waumans, Benny Louisa Angelina, 3,751,645.
Klinkman, Richard A.; and Mueller, Louis E., to Mac-Fab Products, Inc. Plural-cell duct. 3,751,576, Cl. 174-48.000.
Klose, George J.: *See—*
Bartok, Stephen; Kennedy, Melvin R.; Klose, George J.; Landsinger, Edmund E.; and Stewart, George W., 3,751,573.
Klupfel, Kurt-Walter: *See—*
Bauer, Sigrid; Klupfel, Kurt-Walter; and Faust, Raimund Josef, 3,751,259.
Klusmier, Kenneth L.: *See—*
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Knight, Derek Ian: *See—*
Barnard, John Marles Herbert; Knight, Derek Ian; and Longbottom, Eric, 3,750,210.
Knipe, Leonard E., to Continental Can Company, Inc. Feed dog link assembly for sprocket chain. 3,750,862, Cl. 198-189.000.
Knoch, Max. Intrauterine contraceptive device. 3,750,661, Cl. 128-130.000.
Knoepfel, Hanspeter: *See—*
Gobran, Ramsis; Knoepfel, Hanspeter; and Silver, Spencer F., 3,751,449.
Knox Manufacturing Company: *See—*
Bieschke, Hillard J., 3,750,994.
Genger, Horst, 3,750,995.
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, to Eisenwerk-Gesellschaft Maximilianshutte m.b.H. Process for making chromium alloys. 3,751,242, Cl. 75-49.000.
Kobari, Kiyoshi: *See—*
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Kobayashi, Kazutsugu: *See—*
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Koberstein, Edgar; and Lakatos, Eduard, to Laporte Industries Limited. Catalyst for purification of waste gases. 3,751,386, Cl. 252-465.000.
Kocher, Hans. Calendar watch setting mechanism for various month lengths. 3,750,385, Cl. 58-58.000.
Koehn, William A, to Burroughs Corporation. Variable length arithmetic unit. 3,751,650, Cl. 235-175.000.
Koenig, Karl Heinz: *See—*
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Kokubo, Eiichi: *See—*
Kuroiwa, Yoshiro; Kokubo, Eiichi; Aramaki, Koichiro; and Uehara, Hiroshi, 3,751,266.
Kolbel, Gert Frederick. Vibration massaging method and device. 3,750,655, Cl. 128-59.000.
Kolesar, Daniel J.; and Stahl, Charles W., to Babcock & Wilcox Company, The. Machine tool. 3,750,345, Cl. 51-101.00r.
Kollsman Instrument Limited: *See—*
Bennett, John Theodore George; and Read, John Anthony, 3,750,473.
Komori, Shigehiro, to Canon Kabushiki Kaisha. Electrophotographic copying apparatus. 3,751,158, Cl. 355-8.000.
Kongable, Lowell S., to Motorola, Inc. Multilayer metallization system. 3,751,292, Cl. 117-212.000.
Koninklijke Nederlandische Hoogovens en Staalfabrieken N.V.: *See—*
Cramer, Rudolph E.; Van Der Viliet, Cornelis; and Ouwerkerk, Johannes H. W., 3,750,629.
Konnerth, Karl L., Jr.: *See—*
Dilli, Frederick H.; and Konnerth, Karl L., Jr., 3,751,643.
Konopka, Edward Alexander; and Gelzer, Justus Melchior, to Ciba-Geigy Corporation. Synergistic antibiotics. 3,751,567, Cl. 424-114.000.
Koppers Company, Inc.: *See—*
Barber, Sherman H., 3,750,743.
Gidick, Ward F., 3,751,342.
Wintrell, Reginald, 3,750,375.
Kornltzky, Gunter: *See—*
Donath, Hans; Beier, Hans Peter; Otto, Gottfried; Franke, Erich; Kornltzky, Gunter; Dietz, Eberhard; and Wenzel, Klaus, 3,750,826.
Kothart, Vipin M.: *See—*
Tazuma, James J.; and Kothart, Vipin M., 3,751,499.
Kowal, Leonard J.; and Saddler, William R., to Imperial-Eastman Corporation. Tube bender. 3,750,447, Cl. 72-319.000.
Koyama, Tadataka: *See—*
Mochizuki, Mitsuaki; Tanaka, Minoru; and Koyama, Tadataka, 3,750,968.
Krajcik, Larry Lee. Trailer hitch installation apparatus. 3,750,254, Cl. 29-200.00p.
Kraljic, John; Hartford, Winslow H.; and Good, Millard F., to Allied Chemical Corporation. Reduction and control of trivalent chromium in hexavalent chromium processing solutions. 3,751,347, Cl. 204-51.000.
Kramer, Heinz: *See—*
Ruckert, Hans; Kramer, Heinz; and Agustein, Gustav, 3,751,285.
Kramer, Jack M.; and Sitabkhan, Abdul N., to HTL Industries, Inc., mesne. Fire protection system. 3,750,755, Cl. 169-26.000.
Kranc, Stanley J.: *See—*
Back, John H.; Johnson, Elling Z.; Kranc, Stanley J.; and McDowell, Robert D., 3,750,960.
Krauss u. Reichert Spezialmaschinenfabrik: *See—*
Stengle, Roland, 3,750,290.
Krieger, Harold: *See—*
Bonafiglia, Joseph C.; and Krieger, Harold, 3,750,682.
Kristof, John J., 1/2 to Apsco Manufacturing Corporation and 1/2 to Air-O-Matic Power Steer Corporation. Power steering system. 3,750,836, Cl. 180-79.20r.
Kroger, Heinz: *See—*
Karass, Hans-Joachim; and Kroger, Heinz, 3,750,801.
Krohnert, Paul J. Magazine insert. 3,751,074, Cl. 283-46.000.
Kruczek, Wolfgang: *See—*
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Krueger, Wilm: *See—*
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Krumsiek, Uwe; and Holscher, Wilfried, to Rheinstahl AG. Device for use with land vehicles to make the same amphibious. 3,750,613, Cl. 115-.50r.
Krusche, Kurt R., to Allstar Verbrauchsgueter GmbH & Co., KG. Textile brush. 3,750,224, Cl. 15-171.000.
Kruse, Erwin, to Werner Peddinghaus. Profile steel cutter. 3,750,509, Cl. 83-198.000.
Kruse, Friedel; Wahle, Gunter; Erdmann, Otto; and Rudszinat, Willy, to Hauni-Werke Korber & Co. KG. Method and machine for the production of cigarette packs or the like. 3,750,676, Cl. 131-25.000.
Ku, Yuoh; and Simon, Paul W., to Allied Chemical Corporation. Ruminant feed supplement. 3,751,262, Cl. 99-2.0nd.
Kubilos, Charles A., to Abex Corporation. Servoactuator with mechanical feedback. 3,750,532, Cl. 91-3.000.
Kubo, Seitoku: *See—*
Ito, Shin; Kubo, Seitoku; Hashimoto, Mashanao; and Hayashi, Hihiro, 3,750,495.
Kubo, Tokuji: *See—*
Sakata, Haruo; Tanimura, Hiroshi; Kaneko, Ryuichi; Kusaka, Hideo; Sato, Eiichi; and Kubo, Tokuji, 3,751,581.
Kuhlenschmidt, Donald, to Arkla Industries, Inc. Cooling of absorption refrigeration system. 3,750,416, Cl. 62-101.000.
Kuhn, Karl Walter, to Societe d'Etudes de Machines Thermiques Saint-Denis. Emergency stopping device for a fuel-injection internal combustion engine. 3,750,640, Cl. 123-198.00d.
Kump, Ernest J. Structural building frame incorporating utilities. 3,750,697, Cl. 137-356.000.
Kunkel, Ernest O.: *See—*
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,750,763.
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,750,769.
Kunzle, Franz Martin: *See—*
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Kupka, James Harold: *See—*
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Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kurita, Minoru: *See—*
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Kurkov, Victor P.; Lapporte, Seymour J.; and Ioland, William G., to Chevron Research Company. Alpha-acyloxyacetic acid production. 3,751,453, Cl. 260-494.000.
Kuroiwa, Yoshiro; Kokubo, Eiichi; Aramaki, Koichiro; and Uehara, Hiroshi, to Kirin Beer Kabushiki Kaisha, a/k/a Kirin Brewery Co., Ltd. Production of isomerized hop extracts. 3,751,266, Cl. 99-50.500.

Kusaka, Hideo: *See—*
Sakata, Haruo; Tanimura, Hiroshi; Kaneko, Ryuichi; Kusaka, Hideo; Sato, Eiichi; and Kubo, Tokuji, 3,751,581.
Kuwada, Yutaka: *See—*
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Kuwamoto, Hiroshi: *See—*
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Kyowa Hakko Kogyo Co., Ltd.: *See—*
Tanaka, Katsunobu; Kimura, Kazuo; and Yamamoto, Masaki, 3,751,337.
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Labarre, Maurice. Stopper. 3,750,820, Cl. 215-42.000.
Labbe, Francis A. M., to Molins Machine Company Limited. Cigarette making machines. 3,750,678, Cl. 131-84.00c.
Laboratories Pharmascience: *See—*
Rancurel, Alain, 3,751,442.
Lachowica, Donald R.; and Holder, Charles B., to Texaco Inc. Graft copolymers and process for their preparation. 3,751,522, Cl. 260-877.000.
Lachowicz, Donald R.; and Holder, Charles B., to Texaco, Inc. Two-stage process for preparing graft copolymers. 3,751,523, Cl. 260-877.000.
Lafortune, Gerard: *See—*
Mouttet, Henri; and Lafortune, Gerard, 3,750,984.
L'Air Liquide, Societe Anonyme pour d'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Johannes, Conrad; Carbonnel, Emile; Sauty, Pierre; and Grenier, Maurice, 3,750,417.
L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
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Lakatos, Eduard: *See—*
Koberstein, Edgar; and Lakatos, Eduard, 3,751,386.
Lamberti, Vincent; and Reardon, Robert. Detergent compositions. 3,751,369, Cl. 252-89.000.
Land, Edwin H.; and Carcia, Peter P., to Polaroid Corporation. Photographic apparatus and system with automatic film cover ejection. 3,750,551, Cl. 95-11.000.
Landman, Dirk, to Du Pont de Nemours, E. I., and Company. Solder terminal strip. 3,750,252, Cl. 29-191.600.
Landsinger, Edmund E.: *See—*
Bartok, Stephen; Kennedy, Melvin R.; Klose, George J.; Landsinger, Edmund E.; and Stewart, George W., 3,751,573.
Landwehr, Heinz: *See—*
Angelini, Antonio; Handel, Hubert; Landwehr, Heinz; Karlheinz, Hammelmann; Schoning, Josef; Schwenk, Bernd; and Huck, Gerhard, 3,751,336.
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Lange, Gerhardt: *See—*
Gabel, Heinz; Hirschberg, Hans; and Lange, Gerhardt, 3,750,957.
Langer, Arthur W., Jr., to Esso Research and Engineering Company. Organolithium-polyamine compositions. 3,751,384, Cl. 252-431.00n.
Laporte Industries Limited: *See—*
Koberstein, Edgar; and Lakatos, Eduard, 3,751,386.
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Kurkov, Victor P.; Lapporte, Seymour J.; and Ioland, William G., 3,751,453.
Larsen, Agnew E.; deceased (by Larsen, William H.; executor); and Weinstock, Manuel, to United States of America, Navy. Starter engine. 3,750,394, Cl. 60-39.140.
Larsen, Bjorn Arild, to Spegerverk, Christiania. Combined snow shovel, wheel barrow and dolly. 3,751,058, Cl. 280-30.000.
Larsen, William H.: *See—*
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Lasak, Frank J., to General Electric Company. Formed-in-place stator end winding blocks for a dynamoelectric machine. 3,751,548, Cl. 264-261.000.
Latash, Jury Vadimovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.
Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Mixer. 3,751,010, Cl. 259-9.000.
Latinen, May V.: *See—*
Latinen, George A., 3,751,010.
Latzko, Richard I.: *See—*
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Laurelli, James A.: *See—*
Adelizzi, Richard S.; and Laurelli, James A., 3,750,398.
Lauro, Luciano: *See—*
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Lawson, Gerald William: *See—*
Cohen, Joseph David; Brookes, Neil Roger; Stark, Herbert Carl; Hirschkron, Robert; and Lawson, Gerald William, 3,750,397.
Layton, Jack D., to Layton Manufacturing Company. Hydraulic system for paver. 3,751,174, Cl. 404-108.000.
Layton Manufacturing Company: *See—*
Layton, Jack D., 3,751,174.
LcChall, Ruben A.: *See—*
Borisuck, John F.; and LcChall, Ruben A., 3,751,200.
Le Paliscot, Christian; and Venegas, Juan Quintero. Multiple purpose foldable plastic handle for razors or the like. 3,750,280, Cl. 30-85.000.
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Rubio, Manuel Jesus; and Leal, Victor Mario, 3,750,467.
Lebedev, Vladimir Konstantinovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.
Lech, Richard J.; Ziskal, Joseph F.; Jennings, Marvin D.; Orth, Harold R.; and Virtue, Eugene P., to International Harvester Company. Closed center hydraulic system. 3,750,405, Cl. 60-422.000.
Lee, Ayleen Ito; and Yoder, Jean Marie. Musical game puzzle. 3,750,524, Cl. 84-476.000.
Lee, Chi-Hang, to General Foods Corporation. Method for producing sugar acetals. 3,751,409, Cl. 260-210.00r.
Lee, Harold Barry, to Bond's Wear Pty. Limited. Apparatus for edge finishing body opening in garments. 3,750,601, Cl. 112-121.120.
Lee, Henry L., Jr.; and Stoffey, Donald G., to Lee Pharmaceuticals, mesne. Polyacrylate resin compositions. 3,751,399, Cl. 260-47.0ua.
Lee, James W.: *See—*
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Lee Pharmaceuticals, mesne: *See—*
Lee, Henry L., Jr.; and Stoffey, Donald G., 3,751,399.
Lefebvre, Yvon, to American Home Products Corporation. Derivatives of 2H-pyran-3(6H)-ones. 3,751,434, Cl. 260-345.900.
Lefeuvre, Andre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Frangible shock absorbing bumper. 3,751,089, Cl. 293-1.000.
Lefort, Pierre: *See—*
Llop, Helenio; and Lefort, Pierre, 3,751,168.
Leifheit, Gunter, to Leifheit International Gunter Leifheit KG. Foam producing and applying device. 3,750,216, Cl. 15-50.00c.
Leifheit, Gunter, to Leifheit International Gunter Leifheit KG. Cleaning apparatus. 3,750,223, Cl. 15-50.00c.
Leifheit International Gunter Leifheit KG.: *See—*
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Liebscher, Johannes, 3,750,215.
Leifheit International Gunter Leifheit K.G., Firma: *See—*
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Lemelson, Jerome H., to Triax Company, The. Load handling mechanism and automatic storage system. 3,750,804, Cl. 214-16.40a.
Lemelson, Jerome H. Communication system. 3,751,583, Cl. 178-6.000.
Lemieux, Roland G. Multiple driver tool. 3,750,729, Cl. 145-64.000.
Lemmens, Alphonse A. A., to Societe Hamon Sobelco S.A. Cooling tower. 3,751,017, Cl. 261-111.000.
Lems, Willem: *See—*
Verhulst, Antonius Gerardus Hendrikus; Holtwijk, Theodoor; Lems, Willem; and Enz, Ulrich Ernst, 3,751,663.
Lengsfeld, Karl. Electric-motor with built-in electromagnetic disk clutch and brake. 3,750,781, Cl. 192-18.00b.
Lening, George O., to Master Fence Fittings, Inc. Translating gate latch. 3,751,084, Cl. 292-114.000.
Lenz, George R.; and Pappo, Raphael, to Searle, G. D., & Company. Hydrolysis of 3-oximino-delta 5(10) steroids. 3,751,438, Cl. 260-397.400.
Lerch, Wolfgang: *See—*
Greiner, Hermann; and Lerch, Wolfgang, 3,751,707.
Lerich, Lester, to Wej-It Expansion Products, Inc. Anchor bolt with expansion sleeve. 3,750,519, Cl. 85-77.000.
Lerich, Lester, to Wej-it Expansion Products, Inc. Expansion bolt with unitary wedge assembly. 3,750,526, Cl. 85-79.000.
Lerner, Irwin S., to Robins, A. H., Company, Incorporated. Intrauterine contraceptive device. 3,750,662, Cl. 128-130.000.
Leroi, Eugene L., to Societe d'Etudes de Produits Chimiques. Polynicotinic esters of hesperidin. 3,751,570, Cl. 424-180.000.
Leslie, Allen R.: *See—*
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Leutner, Volkmar; and Romes, Romand, to Bosch, Robert, GmbH. Fluidic regulating apparatus for a reversible hydraulic pump or motor. 3,750,534, Cl. 91-506.000.
Lever Brothers Company: *See—*
Detzel, Josef; and Schragle, Walter, 3,750,874.
Eckardt, Wolfgang; Tietjf, Rudolf; and Wolf, Victor, 3,751,564.
Lewkowitz, Bernard, to Rimar Manufacturing, Inc. Self locking door light molding. 3,750,358, Cl. 52-400.000.

Leydon, Arthur J.: *See—*
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Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Kiam, Nonna Fedorovna; Sobolev, Valerian Mikhailovich; and Ponomarenko, Vladimir Ivanovich. Process for isolating isobutylene from butane-butylene fraction. 3,751,509, Cl. 260-677.00a.

Liberman, Esfir Lvovna: *See—*
Fridman, Georgy Nikolaevich; Fialkov, Abram Samuilovich; Davidovich, Yakov Gilievich; Ivanova, Irina Dmitrievna; Sysoeva, Ljudmila Petrovna; Gluskin, Abram Ykovlevich; Galiskarov, Rimm Zigangirovich; Liberman, Esfir Lvovna; and Pomortseva, Vera Stepanovna, 3,751,294.

Libis, Bernard: *See—*
Habicht, Ernst; and Libis, Bernard, 3,751,436.

Libis, Bernard; and Habicht, Ernst, to Ciba-Geigy Corporation. 5-Acyl-2,3-dihydrobenzothiophene-2-carboxylic acids. 3,751,430, Cl. 260-330.500.

Licentia Patent-Verwaltungs-GmbH: *See—*
Petrovsky, Peter; and Bohm, Max, 3,750,880.

Liddell, Norman E.; and Siddall, John B., to Zoecon Corporation. Oxo-substituted aliphatic hydrocarbons. 3,751,479, Cl. 260-593.00r.

Lidolph, Ben B. Combined pump and permanent siphon tube. 3,750,691, Cl. 137-142.000.

Lieberman, Hillel; and Graffeo, Anthony J., to Betz Laboratories, Inc. Petroleum sulfonic acid foam control composition and its use. 3,751,373, Cl. 252-321.000.

Liebscher, Johannes, to Leifheit International Gunter Leifheit KG. Sweeping apparatus. 3,750,215, Cl. 15-42.000.

Liebscher, Johannes, to Leifheit International Gunter Leifheit K.G., Firma. Apparatus for treating floor and other surfaces. 3,750,217, Cl. 15-50.00c.

Liechty, Karl E., to Xerox Corporation. Pre-development exposure assembly. 3,751,155, Cl. 355-3.000.

Lignes Telegraphiques et Telephoniques: *See—*
Manitre, Maurice A.; and Ihepaut, Pierre, 3,751,671.

Lihit Industrial Co., Ltd.: *See—*
Tanaka, Norihito, 3,750,514.

Liles, George N., to National Cash Register Company. Automatic media thickness compensator for a printer. 3,750,792, Cl. 197-1.00r.

Lilliston Corporation: *See—*
Harrell, Larry D., 3,750,865.

Lin, Chao H.: *See—*
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Lindeboom, Herman, to Ingersoll-Rand Company. Fluid seal. 3,751,045, Cl. 272-27.000.

Lindquist, Urban C.: *See—*
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Link, Helmut, to Index-Werke KG Hahn & Tessky. Hydraulically operated friction clutch. 3,750,787, Cl. 192-85.0ab.

Linley, Francis M., Jr. Ultra-accurate gauging apparatus. 3,750,297, Cl. 33-174.001.

Lissarrague, Maurice, to Boussois Souchon Neuvesel. Opening with sliding leaf and especially a glazed opening. 3,750,338, Cl. 49-413.000.

Lithium Corporation of America: *See—*
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Litschi, Gerold: *See—*
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Littell, Ruddy: *See—*
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Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,417.

Livingston, James M., 5% to Jackson, Herman E., 45% to Mims, H. M., Jr. and and Hill, George S. Mechanical grade control. 3,750,756, Cl. 172-4.500.

Ljungberg, Stellan; and Alm, Karl Olof, to Food Control AB. Enzymatic indicator and method of making it. 3,751,382, Cl. 252-408.000.

Llop, Helenio; and Lefort, Pierre, to Societe d'Optique Precision, Electronique et Mecanique- Sopelem. Indicating apparatus for the varying concentration of a solution. 3,751,168, Cl. 356-135.000.

Lloyd, Neil E.; Owen, Archibald A.; and Brenner, David C., to Celanese Corporation. Yarn compacting apparatus. 3,750,242, Cl. 28-1.400.

Lockwood, John W. Set of golf irons. 3,751,035, Cl. 273-77.00a.

Lohbauer, Kenneth R.: *See—*
Bubula, Thomas J.; and Lohbauer, Kenneth R., 3,750,690.

Lohberg, Peter, to Braun Aktiengesellschaft. Circuit arrangement for producing a high voltage spark. 3,751,713, Cl. 315-209.00t.

Lohkamp, Carl W., to United States of America, Navy. Illuminating round having dual range capability. 3,750,574, Cl. 102-34.100.

Lonati, Francesco. Pushing device in double cylinder circular knitting machines. 3,750,426, Cl. 66-149.00r.

Long Manufacturing Co., Inc.: *See—*
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Long, Richard H. Refractometer and reflectometer. 3,751,162, Cl. 356-30.000.

Longbottom, Eric: *See—*
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Lookabaugh, Clair E.: *See—*
Jensen, Jens S.; Hamrock, Edward M.; and Lookabaugh, Clair E., 3,750,894.

Loomans, David C. Orthopedic apparatus for legs to enable standing. 3,750,659, Cl. 128-80.00r.

Loser, Alois. Web dryer. 3,750,305, Cl. 34-56.000.

Loskutov, Pavel Petrovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.

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Lovett, Jack R. Shrimp separating methods. 3,750,233, Cl. 17-45.000.

Lowe, Donald F.: *See—*
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Lucas, James M.: *See—*
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Lucas, Joseph, (Industries) Limited: *See—*
Holt, William David, 3,751,674.
Jukes, Norman Alfred, 3,751,609.
McNab, John Henry, 3,751,299.

Luckett, Christopher Hawthorn; Cosgrove, John Travers; and Holland, Gordon Christopher, to British Railways Board. Sorting conveyors. 3,750,879, Cl. 214-1.00r.

Luderer, Manfred H.; and Ettenhofer, Anton, to Atlas Copco Aktiebolag. Spray gun for pulverulent material entrained in a gaseous stream. 3,750,949, Cl. 239-15.000.

Luft, Robert G., to International Harvester Company. Steering system. 3,750,834, Cl. 180-79.20c.

Luo, Zong S.: *See—*
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Lykes Pasco Packing Co., Dispenser Manufacturing Div.: *See—*
Bauerlein, Carl; Wertz, Linda M.; and Acuff, Kenneth L., 3,750,908.

Lyon, Clifford R. Motor mount. 3,750,988, Cl. 248-4.000.

Lyon, T. Goodwin, to Relaxaway Corporation. Combination bath aerator and hair dryer. 3,750,657, Cl. 128-66.000.

Lyon-Shaw, Incorporated: *See—*
Shaw, Lawrence M., 3,751,110.

Lyons, Richard J.; and Egger, Luis G., to United Merchants and Manufacturers, Inc. Tone-on-tone resin bonded pigmenting of flock printed fabric with low temperature air drying. 3,751,284, Cl. 117-28.000.

M&T Chemicals Inc.: *See—*
Arcilesi, Donald A., 3,751,289.

Maag Gear Wheel & Machine Company, Limited: *See—*
Maag, Oskar; and Wenger, Otto, 3,750,443.

Maag, Oskar; and Wenger, Otto, to Maag Gear Wheel & Machine Company, Limited. Gear rolling machines. 3,750,443, Cl. 72-72.000.

Mac Ivergan, Robert G.: *See—*
Stringer, Myron Scott; Smith, Daniel W.; Mac Ivergan, Robert G.; and Eldenbaum, Robert W., 3,750,916.

Mac-Fab Products, Inc.: *See—*
Klinkman, Richard A.; and Mueller, Louis E., 3,751,576.

MacConnell, John R. Portable golf ball cleaning device. 3,750,219, Cl. 15-118.000.

Machlanski, Sigmund H. Orchard heating system and burner. 3,750,642, Cl. 126-59.500.

Mackinnon, Allan A., to Associated Manufacturers International, S.A. Avenida Justo Arosemena y Calle Treinta y Dos. Turning control signal. 3,750,627, Cl. 119-44.000.

Macrodata Company: *See—*
Hart, Thomas William, Jr., 3,751,649.

Macula, Andrew J.; Macula, John T.; and Schwartz, Benno A., Jr. Brush electroplating metal at increased rates of deposition. 3,751,343, Cl. 204-15.000.

Macula, John T.: *See—*
Macula, Andrew J.; Macula, John T.; and Schwartz, Benno A., Jr., 3,751,343.

Madden, John; and Bye-Jorgensen, Hans-Jorgen, to Robinson Sacks Limited. Crushing machines for glass articles. 3,750,965, Cl. 241-36.000.

Madsen, Thomas Lund. Apparatus for measuring the degree of thermal discomfort and a system comprising such an apparatus. 3,751,634, Cl. 219-497.000.

Maeder, Roger A.; Oster, Frederick W.; and Soderman, Richard J., to International Business Machines Corporation. Semiconductor and integrated circuit device yield modeling. 3,751,647, Cl. 235-151.110.

Magerle, Karl, to Tubmatic Inter AG. Device for closing a mould cavity. 3,751,189, Cl. 425-258.000.

Mahan, Guy S., to International Basic Economy Corporation. Fluidic resistance-capacitance device. 3,750,702, Cl. 137-608.000.

Mahler, Gert; and Zwirner, Gerhard, to Gebr. Happich GmbH. Securement of covering about vehicle contoured sunvisor. 3,751,106, Cl. 296-97.00h.

Maier, Josef. Device for spacing sheeting of a construction form. 3,750,996, Cl. 249-43.000.

Maier, Rene. Transfer unit for an automatic machine for the large-scale production of parts comprising two welded elements. 3,751,621, Cl. 219-10.550.

Maier, Richard J.: *See—*
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Majusick, Thaddeus W.: *See—*
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Makinster, Marshall C.; and Grippin, Wayne P. Drive means for cable-mounted vehicle. 3,750,591, Cl. 104-112.000.

Malherbe, Edward Phillip, to Union Carbide Corporation. Optical mounting device for use in laser systems. 3,751,139, Cl. 350-252.000.

Malliere, Jean: *See—*
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Mallinson, Ronald Ingham. Valves for controlling the supply of drinking water to poultry and other livestock. 3,750,706, Cl. 137-614.180.

Malson, Harold A.: *See—*
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Mammann, Joachim-Friedrich: *See—*
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Mandroian, Harold, to Atek Industries, Inc. Control circuit for an electrolytic cell. 3,751,355, Cl. 204-228.000.

Manitre, Maurice A.; and Ihepaut, Pierre, to Lignes Telegraphiques et Telephoniques. Opto-electronic relay. 3,751,671, Cl. 250-199.000.

Manka, Jerzy: *See—*
Partyka, Henryk; Jankowski, Stanislaw; and Manka, Jerzy, 3,751,018.

Manning, Harold E., to Petro-Tex Chemical Corporation. Manganese ferrite oxidative dehydrogenation catalysts. 3,751,385, Cl. 252-447.000.

Marcel, Jean Pierre. Rotary devices operated by pressurized-fluid. 3,751,194, Cl. 418-217.000.

Marcus, Irwin: *See—*
Kintish, Irving L.; and Marcus, Irwin, 3,750,582.

Marine Construction & Design Company: *See—*
Tremoulet, Olivier L., Jr., 3,750,970.

Marks, Alvin M. Hard transparent sheet-like material or coating. 3,751,326, Cl. 161-5.000.

Marschall, Helmut; Kammermayer, Wolfgang; Beller, Hans Albert; Hahm, Heinz; and Belart, Juan, to Teves, Alfred, GmbH. Piston assembly for dual-network disk-brake system. 3,750,857, Cl. 188-345.000.

Marsh, Ronald W., to Pullman Incorporated. Operating mechanism for plug type door. 3,750,335, Cl. 49-220.000.

Martin, David: *See—*
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Martin, Robert A., to Clevepak Corporation. Apparatus for controlling a sewing machine thread cutter. 3,750,603, Cl. 112-252.000.

Martinez, Eugene, 1/2 to Reibel, Robert H. General arrangement for projector. 3,751,160, Cl. 353-52.000.

Maruko, Shuji U.: *See—*
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Mason, Lawrence J., to Xerox Corporation. Projection stencil assembly. 3,750,539, Cl. 95-4.50r.

Massa, Neal N., to Chroma Printing Corporation. Methods for color printing and articles made thereby. 3,751,282, Cl. 117-13.000.

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Mattell, Inc.: *See—*
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Matthews, Arthur James, Jr.; and Terry, Raymond Otis, Jr., to Western Electric Company, Incorporated. Apparatus for selectively removing material from an article. 3,750,341, Cl. 51-8.000.

Matthiessen, Roy A. Sled ski. 3,751,057, Cl. 280-28.000.

Mauch, Harald: *See—*
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Maudlin, Wendell E., to Borg-Warner Corporation. Evaporator and condensate collector arrangement for refrigeration apparatus. 3,750,418, Cl. 62-290.000.

Maximov, Valentin Dmitrievich: *See—*
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May & Baker Limited: *See—*
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Maytag Company, The: *See—*
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McCaffrey, Horace, Jr. Housing for an air cooled engine. 3,750,842, Cl. 181-33.00r.

McCall, Kenneth E.: *See—*
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McCall, William B. Rotary engine with intermeshed disks incorporating adjustable gear structure. 3,751,193, Cl. 418-107.000.

McClellan, Bingham A., to McClellan Industries, Inc. Artificial lure for fishing. 3,750,321, Cl. 43-42.100.

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McClure, Glenn T., to Westinghouse Air Brake Company. Handbrake apparatus. 3,750,488, Cl. 74-337.000.

McCord, Jimmy C. Vehicle traction device and method of mounting. 3,750,734, Cl. 152-220.000.

McCrary, Leon E.: *See—*
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Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,417.

McGee, Richard P., to Gould Inc. Piston ring assembly. 3,751,047, Cl. 277-165.000.

McGillvary, Daniel Ross, to Firestone Tire & Rubber Company, The. Process of centrifugal casting. 3,751,551, Cl. 264-311.000.

McGrath, N. Christian; and Nash, Roger M. Encapsulated electrical component. 3,751,724, Cl. 317-234.00r.

McGuire, W. B., Co., Inc.: *See—*
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McGuire, Winston B., to McGuire, W. B., Co., Inc. Flexible traffic door. 3,750,739, Cl. 160-354.000.

McGurran, Kelly T.; and Banitt, Elden H., to Riker Laboratories, Inc. Process for preparation of substituted fluromethane sulfonanidides. 3,751,462, Cl. 260-556.00a.

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McMahon, Elihu Hassell. Tracking mounts for celestial ray detecting devices. 3,751,134, Cl. 350-83.000.
McMillan, James R. Method and means of gang saw lubrication and cooling. 3,750,503, Cl. 83-16.000.
McNab, John Henry, to Lucas, Joseph, (Industries) Limited. Method of manufacturing battery plates. 3,751,299, Cl. 136-9.000.
McNabney, John C., to Trane Company, The. Air distribution apparatus. 3,750,839, Cl. 181-50.000.
McNatt, Newman W. Apparatus for restoring damaged paper rolls. 3,751,008, Cl. 254-134.000.
McNulty, Patrick J.; Swithenbank, Colin; Viste, Kenneth L.; and Von Meyer, William C., to Rohm and Haas Company. Herbicidal compositions containing N-(1,1-dialkyl-3-chlooacetonyl) benzamides. 3,751,239, Cl. 71-118.000.
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Mehnert, Johannes, to Siemag Siegener Maschinenbau Gesellschaft mit beschrankter Haftung. Apparatus for blow molding. 3,751,207, Cl. 425-326.000.
Mehr, Karl Gunter: *See—*
Kasemeier, Rolf; and Mehr, Karl Gunter, 3,750,550.
Melin, Thomas N. Load squaring apparatus. 3,750,901, Cl. 214-6.00s.
Menasse, Raphael; and Gatzi, Karl, to Ciba-Geigy Corporation. New N-benzylidene alkylamines. 3,751,466, Cl. 260-566.00f.
Menough, Richard M.; and Cuddigan, Robert W., to Gates Rubber Company, The. Method of making breaker bands for pneumatic tires. 3,751,316, Cl. 156-127.000.
Meraikib, Mohammed: *See—*
Wenzel, Werner; Franke, Friedrich H.; and Meraikib, Mohammed, 3,751,214.
Merck & Co., Inc.: *See—*
Henry, David W.; Hoff, Dale R.; and Patchett, Arthur A., 3,751,427.
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Spivey, Joseph W., 3,750,199.
Mergenthaler Linotype GmbH: *See—*
Debus, Karl; Debus, Karl-Jurgen; and Mohr, Eberhard, 3,750,554.
Merikallio, Pauli Assar Antero. Sleeping bag. 3,750,202, Cl. 5-343.000.
Merkley, Joseph H.: *See—*
Kamineski, Conrad W.; and Merkley, Joseph H., 3,751,501.
Merrick, Richard H., to Arkla Industries, Inc. Horizontal firing of generator in absorption refrigerator. 3,750,421, Cl. 62-476.000.
Messer Griesheim GmbH: *See—*
Gabel, Heinz; Hirschberg, Hans; and Lange, Gerhardt, 3,750,957.
Messerschmitt-Bolkow Blohm GmbH: *See—*
Wackerele, Peter Martin, 3,751,224.
Messervey, Clifford Harry; and Riddell, Maynard Harry, to Borden, Inc. High pressure can testing apparatus. 3,750,458, Cl. 73-45.100.
Messner, Sigfried; Depmeyer, Lothar; Barth, Lothar; Graup, Josef; and Rhein, Stein A. Boot, especially ski boot. 3,750,310, Cl. 36-2.5al.
Metzger, Lenard M., to Eastman Kodak Company. Color temperature control for television apparatus. 3,751,580, Cl. 178-5.40r.
Meyerhoefer, Carl E., to General Signal Corporation, The. Sonic beater nozzle. 3,750,221, Cl. 15-404.000.
Meyers, Clyde C.: *See—*
Keown, Philip E.; Meyers, Clyde C.; and Wetherold, Robert G., 3,751,504.
Michael, Gerhard: *See—*
Bergmeyer, Hans Ulrich; Michael, Gerhard; Nelboeck-Hochstetter, Michael; Stork, Harald; and Weimann, Gunter, 3,751,408.
Michaud, Orean E.: *See—*
Kindl, George F.; and Michaud, Orean E., 3,750,296.
Michel, Alfred; and Rummel, Werner, to Siemens Aktiengesellschaft. Opto-electronic apparatus for measuring and controlling the concentration of solutions. 3,751,672, Cl. 250-218.000.
Michelson, Gunnar P. Guarded razor edge apparatus. 3,750,285, Cl. 30-346.580.
Michelson, Robin P., to Beckman Instruments, Inc. Method for inducing hearing. 3,751,605, Cl. 179-107.00r.
Michenko, Hildegard M.; and Tyler, Hubert Thomas, to Ohio State University, The. Method and system for mixing unlike ingredients. 3,751,012, Cl. 259-148.000.
Michurov, Jury Ivanovich: *See—*
Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Kiam, Nonna Fedorovna; Sobolev, Valerian Mikhailovich; and Ponomarenko, Vladimir Ivanovich, 3,751,509.
Micromatic Industries, Inc.: *See—*
Ellis, Myron P.; and Gavasso, Richard J., 3,751,346.
Micromedic Systems, Inc.: *See—*
Sanz, Manuel C.; and Revillet, Georges, 3,751,173.
Microseal Corporation: *See—*
Anderson, Thomas P., 3,750,315.
Microsystems International, Limited: *See—*
Dupuis, Jean M., 3,750,271.
Microwire Corporation: *See—*
Dibrell, James W., 3,750,974.
Middlesworth, Tommy A.: *See—*
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Middleton, Anthony Edward: *See—*
Harrison, Robert Henry; Russell, John Patrick; and Middleton, Anthony Edward, 3,750,436.
Middleton, Lennie S., Jr., to Puyanic, Max D. Self contained spinnaker launching pouch. 3,750,608, Cl. 114-103.000.
Middleton, William J., to Du Pont de Nemours, E. I., and Company. Modified phenolic stilbenes as antifertility agents. 3,751,485, Cl. 260-612.00r.
Midway Fishing Tool Company: *See—*
Stanfill, Gary L., 3,750,810.
Midwestern Specialties, Ltd.: *See—*
Stanley, Richard Carl, 3,750,255.
Miels, Edward T.; and Andreasson, Sven. Powder dispenser. 3,750,912, Cl. 222-359.000.
Mignone, Albert E.: *See—*
Wernikoff, Robert E.; Van Horn, Joseph M.; and Mignone, Albert E., 3,751,582.
Mignone, Gilda: *See—*
Wernikoff, Robert E.; Van Horn, Joseph M.; and Mignone, Albert E., 3,751,582.
Miki, Yokio, to Minolta Camera Kabushiki Kaisha. Trick photographing system in a motor driven motion picture camera. 3,751,147, Cl. 352-91.000.
Miles, Derek; and Musson, Ian M. Tube-coiling apparatus. 3,750,445, Cl. 72-144.000.
Miles Laboratories, Inc.: *See—*
Havera, Herbert John; and Hayao, Shin, 3,751,414.
Wiley, Richard H., 3,751,458.
Miles, Thomas R., to Foamat Foods Corporation. Foam piercing apparatus. 3,750,508, Cl. 83-177.000.
Milik, Rudolf F. L., to Evans, Trevor Gwilyn, James, Michael and Ryder, Geoffrey Alan; trading as Design Link. Mixing of particulate and fibrous materials. 3,751,011, Cl. 259-146.000.
Millard, Barry John: *See—*
Jenvey, Leslie Richard; and Millard, Barry John, 3,750,835.
Miller, Arthur D.; and Verbel, Robert. Electric chronometer with binary readout. 3,750,384, Cl. 58-50.00r.
Miller, Benjamin L. Teasing comb. 3,750,680, Cl. 132-11.00r.
Miller, Charles W., to Reynolds, R. J., Tobacco Company. Tobacco product. 3,750,674, Cl. 131-17.00r.
Miller, Edwin A., to Texas Instruments, Incorporated. Coinage material. 3,750,253, Cl. 29-196.300.
Miller, Matthew N.; and Seitz, Fred H., to Fairchild Industries, Inc. Vehicle servicing cart. 3,751,101, Cl. 296-1.00r.
Miller, Norman Carlile: *See—*
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Miller, Robert G.; Crayton, John W.; Farmer, Charles G.; and Satzler, Ronald L., to Production Technology Inc., mesne. Apparatus and control for angular alignment of inertia or friction welded parts. 3,750,927, Cl. 228-2.000.

Miller, Stanley J., to National Can Corporation. Method and apparatus for conditioning cans. 3,750,501, Cl. 82-59.00r.
Miller, Walter E., Jr.: *See—*
Starkey, George W.; Sitton, Robert L.; Duke, Jimmy R.; and Miller, Walter E., Jr., 3,751,166.
Miller, Wesley W.; Litschi, Gerold; and Bixler, Warren A., to Grace, W. R., & Co. Automated apparatus for photocomposing. 3,751,164, Cl. 355-100.000.
Milligan, J. David; and Shulman, Murray, to Hydrocarbon Research, Inc. Cryogenic apparatus assembly method. 3,750,413, Cl. 62-42.000.
Mimino, Tohru; Kinoshita, Kazuhisa; Minegishi, Isao; and Shinoda, Takayuki. Austenitic heat resisting steel. 3,751,244, Cl. 75-128.00g.
Mims, H. M., Jr. and: *See—*
Livingston, James M., 3,750,756.
Minami, Keiichi; Susami, Kozo; and Sakai, Masaaki, to Toray Industries, Inc. Process and apparatus for feeding fiber in an open end spinning machine. 3,750,382, Cl. 57-58.910.
Minami, Satoyuki; Nakoji, Masateru; and Aoki, Toshikazu, to Foray Industries, Inc. Bis-guanidium tetrachlorophthalate and tetrabromophthalate and process for making same. 3,751,454, Cl. 260-501.140.
Minbiole, Louis J., Jr.; Clark, Chester G.; and Neumann, John W., to Oxy Metal Finishing Corporation. Method for simultaneous fluid processing and conveying. 3,751,297, Cl. 134-30.000.
Minegishi, Isao: *See—*
Mimino, Tohru; Kinoshita, Kazuhisa; Minegishi, Isao; and Shinoda, Takayuki, 3,751,244.
Miner Enterprises, Inc.: *See—*
Kendall, Giles A.; and Wallace, William D., 3,751,020.
Ministerium fur Verkehrswesen: *See—*
Donath, Hans; Beier, Hans Peter; Otto, Gottfried; Franke, Erich; Kornltzky, Gunter; Dietz, Eberhard; and Wenzel, Klaus, 3,750,826.
Minks, Floyd M. Alternator-rectifier electronic charging and discharging apparatus for ignition systems and the like. 3,750,637, Cl. 123-148.00e.
Minnesota Mining and Manufacturing Company: *See—*
Dahlman, Keith E., 3,751,257.
Gobran, Ramsis; Knoepfel, Hanspeter; and Silver, Spencer F., 3,751,449.
Moses, Donald W., 3,751,595.
Natkanski, Zygmunt, 3,751,000.
Swan, David W., 3,751,247.
Toensing, James W., 3,750,511.
Wright, Charles D.; Zollinger, Joseph La Mar; Mitsch, Ronald A.; and Dybvig, Douglas H., 3,751,312.
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Minto, Wallace L.; and Keller, Leonard J., to Kinetics Corporation. Prime mover system. 3,750,393, Cl. 60-36.000.
Miranda, Eduardo V.: *See—*
Seitz, Lamont J.; and Miranda, Eduardo V., 3,751,172.
Mitchell, Graham R.: *See—*
Johnson, Ingolf B.; and Mitchell, Graham R., 3,751,716.
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Mitsui Toatus Chemicals, Incorporated: *See—*
Hara, Junji; Nakazima, Yoshiharu; and Honjo, Yoshitoshi, 3,751,403.
Mitsuo, Kyoto: *See—*
Kimura, Hiroshiro; Arimoto, Heiji; Nara, Hirohisa; and Mitsuo, Kyoto, 3,750,716.
Miura, Isago. Method and apparatus of wrapping for annular goods. 3,750,364, Cl. 53-13.000.
Miyoshi, Akira: *See—*
Kawakami, Hiroshi; Satoh, Hideshi; Miyoshi, Akira; Kawabata, Kazuharu; and Kimura, Kohkichi, 3,751,547.
Mizuki, Eiichi: *See—*
Taguchi, Seiichi; Tezuka, Sigeru; Tomotsu, Takeshi; and Mizuki, Eiichi, 3,750,567.
Mizuno, Yukio; and Oguro, Takeshi, to Nissan Motor Company. Let-off mechanism of loom. 3,750,715, Cl. 139-110.000.
Mladek, Milos; Burget, Bohumir; Bures, Ladislav; and Rajnoh, Jaroslav, to Elitex, Zavody Textilniko Strojirenstvi. Device for separating fibrous material. 3,750,380, Cl. 57-58.950.
Mobil Oil Corporation: *See—*
Burress, George Thomas, 3,751,506.
Fitch, John L.; and Jones, Lloyd G., 3,750,412.
Keown, Philip E.; Meyers, Clyde C.; and Wetherold, Robert G., 3,751,504.
Tobias, Michael A., 3,751,478.
Mochizuki, Mitsuaki; Tanaka, Minoru; and Koyama, Tadataka, to Okazaki Manufacturing Company. Article winding device. 3,750,968, Cl. 242-7.150.
Moebius, Kurt O. Locking nut. 3,750,732, Cl. 151-2.00a.
Mohr, Eberhard: *See—*
Debus, Karl; Debus, Karl-Jurgen; and Mohr, Eberhard, 3,750,554.
Molins Machine Company Limited: *See—*
Labbe, Francis A. M., 3,750,678.
Molyhdenum Corporation of America: *See—*
Peterson, Hal D., 3,751,555.
Mond International, Limited: *See—*
Green, Patrick Hart; and Foster, George Wilbert, 3,751,319.
Monsanto Company: *See—*
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Monsanto Research Corporation: *See—*
Coleman, Harold L.; Malson, Harold A.; Du Four, Howard R.; and Olt, Richard G., 3,751,668.
Mooers, Calvin N. Signalling system. 3,751,638, Cl. 236-61.60r.
Moore, Earl P., Jr.: *See—*
Beyer, James N.; Moore, Earl P., Jr.; and Rusher, Robert L., 3,751,276.
Moore, George E., to General Electric Company. Combustor-boiler for rankine-cycle engines. 3,750,399, Cl. 60-108.000.
Moore, Robert David, Jr. High heat flux heat pipe. 3,750,745, Cl. 165-105.000.
Moran, Daniel Bryan: *See—*
Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,416.
Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,417.
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Morgan, Anthony J. Compound tear label. 3,750,317, Cl. 40-310.000.
Morgan Construction Company: *See—*
Hill, William J.; and Klusmier, Kenneth L., 3,750,799.
Morgan, George, Jr., to Procter & Gamble Company, The. Disintegration process for fibrous sheet material. 3,750,962, Cl. 241-18.000.
Morgan, Joseph S.: *See—*
Hunt, Ronald E.; and Morgan, Joseph S., 3,750,797.
Morgan, R. A., Co., Inc.: *See—*
Rinehart, Louis P., 3,751,152.
Morgan, Robert W. Repositionable T-shaped back cleaning device. 3,750,226, Cl. 15-187.000.
Morganson, Peter H.: *See—*
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Mori, Yasumichi: *See—*
Suzuki, Hiroshige; Einaga, Hisahiko; and Mori, Yasumichi, 3,751,557.
Morley, Edwin R.; and Jacobs, Roger E., to AMF Incorporated. Synchronus motor construction with directional control. 3,751,697, Cl. 310-41.000.
Morley, Edwin Richard; and Schmidt, Gerald Frederick, to AMF Incorporated. One-way directional control means for synchronous A.C. motors. 3,751,695, Cl. 310-41.000.
Morreale, Anthony P., to Computer Devices Corporation. Tooth arrangement for a stepping motor. 3,751,696, Cl. 310-49.000.
Morris, Geoffrey William, to Rolls-Royce Limited. Gas turbine ducted fan engines for aircraft. 3,750,983, Cl. 244-54.000.
Morris, Herbert R., to Emhart Corporation. Method for making evaporator or condenser construction. 3,750,248, Cl. 29-157.30r.
Morrison & Morrison Limited: *See—*
Shelbourne, Hugh C.; and Selfe, Albert E. J., 3,750,765.
Morse, William L. Mobile home. 3,750,356, Cl. 52-204.000.
Morton-Norwich Products, Inc.: *See—*
Sipos, Frank; Pals, Donald T.; and Denning, George S., Jr., 3,751,404.
Moscony, John Joseph; and Kennard, Ronald Lester, to RCA Corporation. Method for photoexposing a coated sheet prior to etching. 3,751,250, Cl. 96-36.000.
Moses, Donald W., to Minnesota Mining and Manufacturing Company. Time sharing subscriber communications system. 3,751,595, Cl. 179-15.0al.
Motorola, Inc.: *See—*
Kongable, Lowell S., 3,751,292.
Wang, Raymond C., 3,750,268.
Mott, Carl W., Jr.; and Middlesworth, Tommy A., to Mott Corporation. Hydraulic pump and cooler unit. 3,751,191, Cl. 417-313.000.
Mott Corporation: *See—*
Mott, Carl W., Jr.; and Middlesworth, Tommy A., 3,751,191.

Mott, James D., to Hydrill Company. Subsurface safety valve. 3,750,751, Cl. 166-224.00s.

Mott, James D., to Hydril Company. Completion and kill valve. 3,750,752, Cl. 166-224.000.

Mount Sinai School of Medicine of the City: *See*—
Simon, Norman, 3,750,653.

Mouttet, Henri; and Lafortune, Gerard, to Societe National, Industrielle Aerospatiale. Mechanical transmission relay for a control facility comprising a manual element and a servomotor, and its use in aircraft control systems. 3,750,984, Cl. 244-76.00r.

Moyer, Craig R.: *See*—
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MSI Data Corporation: *See*—
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Mueller, Albrecht: *See*—
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Mueller, Arthur C., to Bell & Howell Company. Camera shutter control system. 3,751,149, Cl. 352-177.000.

Mueller, Louis E.: *See*—
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Muller, Louis F., to Medical Enterprises, Inc. Method and means for making a splint. 3,750,660, Cl. 128-89.00r.

Mundorff, Sheila Ann; Biddy, Basil Glover; and Shreatha, Buddhi Man, to Eastman Dental Center. Method of coating teeth with a durable glaze. 3,751,568, Cl. 424-131.000.

Muns, Joseph C. Gravity action tipless tray with verticle cushion means. 3,750,597, Cl. 108-45.000.

Muraoka, Shigetaro. Magnetic record-playback device. 3,751,598, Cl. 179-100.2md.

Murato, Kenichi; Maruyama, Yasuo; Wakao, Mitsuro; Takahashi, Shogo; and Takami, Hisao, to Japanese National Railways and Kayabakogyo Kabushikikaisha. Automatic releasing apparatus for couplers of railway vehicles. 3,750,897, Cl. 213-211.000.

Murfitt, Donald: *See*—
Peeso, James Bruce, Jr.; and Murfitt, Donald, 3,751,545.

Murman, Fernando; and Hiatt, Lyle E., to Hydril Company, mesne. Hydraulic fail-safe valve operator. 3,750,404, Cl. 60-413.000.

Murphy, Howard E.: *See*—
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Muschaweck, Roman: *See*—
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Musitronic Inc.: *See*—
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Musschoot, Albert, to General Kinematics Corporation. Vibratory conveyor with counterpoise. 3,750,866, Cl. 198-220.0ch.

Musson, Ian M.: *See*—
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Muto, Kazuki, to Mitsui Petrochemical Industries, Ltd. Propylene polymer composition containing glass fibers. 3,751,397, Cl. 260-41.0ag.

Myles, Charles E., to Alvey, Inc. Universal suction head conveyor. 3,751,095, Cl. 294-64.00r.

Nagy, Stanley S.: *See*—
Wilhelm, George E.; Nagy, Stanley S.; and Hahn, Moon T., 3,751,345.

Naito, Mirihisa, to Matsushita Electric Industrial Co., Ltd. Projector. 3,751,153, Cl. 353-27.000.

Nakai, Susumu; and Sameshima, Tadanori, to Honshu Paper Company, Limited. Spray coating apparatus. 3,750,955, Cl. 239-420.000.

Nakajima, Yasuo; and Etoo, Yukihiro, to Nissan Motor Company, Limited. Crankcase ventilating system for fuel injection type internal combustion engine. 3,750,634, Cl. 123-119.00b.

Nakayama, Hirokazu: *See*—
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Nakayama, Horokazu: *See*—
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Nakayama, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for lubricating a rotary swash plate type compressor. 3,750,848, Cl. 184-6.160.

Nakazima, Yoshiharu: *See*—
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Nakoji, Masateru: *See*—
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Nalco Chemical Company: *See*—
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Nambu, Shyuya, to Nissan Motor Company, Limited. Exhaust gas after-burning system for automotive internal combustion engine. 3,750,401, Cl. 60-286.000.

Nara, Hirohisa: *See*—
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Narahari, Gatiu, to Sycon Corporation. Wheel suspension system. 3,751,066, Cl. 280-124.00f.

Nardi, Giancarlo, to Compagnia Italiana Westinghouse Freni e Segnali. Carburetion system. 3,751,016, Cl. 261-36.00a.

Nash, Roger M.: *See*—
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National Can Corporation: *See*—
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National Cash Register Company: *See*—
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National Cash Register Company, The: *See*—
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National Distillers and Chemical Corporation: *See*—
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National Institute for Researches in Inorganic Materials: *See*—
Suzuki, Hiroshige; Einaga, Hisahiko; and Mori, Yasumichi, 3,751,557.

National Mine Service Company: *See*—
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National Research Development Corporation: *See*—
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Natkanski, Zygmunt, to Minnesota Mining and Manufacturing Company. Valve construction. 3,751,000, Cl. 251-77.000.

Natsugari, Hideaki; Meguro, Kanji; and Kuwada, Yutaka, to Takeda Chemical Industries, Ltd. 2-Amino-1,5-benzociazocine derivatives. 3,751,412, Cl. 260-239.0bd.

Nauman, Robert V.: *See*—
Hughes, Elvin, Jr.; and Nauman, Robert V., 3,751,171.

Nauta, Jan P., to Rowland Development Corporation. Method for making differential durometer faced rolls. 3,751,550, Cl. 264-275.000.

Negus, George T., to Eastman Kodak Company. Control strip holder. 3,750,867, Cl. 206-1.00r.

Nelboeck-Hochstetter, Michael: *See*—
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Nelms, Joe W.; and Nelms, William L. Rocket assisted projectile. 3,750,979, Cl. 244-3.240.

Nelms, William L.: *See*—
Nelms, Joe W.; and Nelms, William L., 3,750,979.

Nelson, Donald E. Educational demonstration model. 3,750,308, Cl. 35-45.000.

Nelson, Donald F. Power transmission system. 3,750,616, Cl. 115-35.00r.

Nelson, Michael A.; Patrick, Robert F.; and Wehrenberg, Thomas M., to Corhart Refractories Company. Burned basic refractory and batch therefor. 3,751,273, Cl. 106-57.000.

Nerurkar, Mohanial Shantaram; and Dawson, Paul Ernest, to Imperial Chemical Industries Limited. Method of producing a photographic film base having a subbing layer. 3,751,280, Cl. 117-73.000.

Nerwin, Robert, to Eastman Kodak Company. Photographic film unit. 3,751,254, Cl. 96-76.00r.

Nestork, William John, to International Business Machines Corporation. Radially oriented monolithic circuit masterslice. 3,751,720, Cl. 317-234.00r.

Nettleton, David John, to Rank Organisation Limited, The. Rotary couplings. 3,750,424, Cl. 64-31.000.

Neukirchner, Peter H.: *See*—
Peterson, Dean M.; and Neukirchner, Peter H., 3,751,652.

Neumann, Gerhard Max, to Delbag-Luftfilter Gesellschaft mit beschrankter. Gas filters. 3,750,374, Cl. 55-484.000.

Neumann, John W.: *See*—
Minbiole, Louis J., Jr.; Clark, Chester G.; and Neumann, John W., 3,751,297.

Neumann, Ulrich, to Chemiebau, Dr. A. Zieren, GmbH. & Co. KG. Multi-stage process for the preparation of sodium bicarbonate. 3,751,560, Cl. 423-189.000.

Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Thermographic transfer sheet and process of copying therewith. 3,751,286, Cl. 117-36.200.

Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Thermographic transfer process. 3,751,318, Cl. 156-234.000.

Newman, Vernon E., to Yakima Tent and Awning Co., Ltd. Flexible closure for log steaming vat. 3,750,740, Cl. 160-354.000.

Niagara Machine & Tool Works: *See*—
Jones, Clarence O., Jr., 3,750,446.

Niagara Wire Weaving Company, Limited: *See*—
Ott, William C.; and Dionne, Leo Paul, 3,750,466.

Nicholas, Chris: *See*—
Thybault, Neil H., 3,750,327.

Nichols, Herbert E.; and Mason, Harvey W., to General Electric Company. Interblade baffle and damper. 3,751,183, Cl. 416-220.000.

Nichols, Joseph, to Princeton Biomedix Incorporated. Medicated gelled oils. 3,751,562, Cl. 424-45.000.

Nicolay, Theodore E. Container and closure for the same. 3,750,933, Cl. 229-39.00r.

Niederer, Adolf, to Aktiengesellschaft Brown, Boveri & Cie. Electrical contact structure of the plug-and socket type circuit breakers. 3,751,619, Cl. 200-166.0bh.
Niedzielski, Albert. Apparatus for use in treating fluids. 3,751,231, Cl. 23-260.000.
Nielsen, Edwin A.; and Stopek, Benjamin, to Ideal Toy Corporation. Winding mechanism having platform for supporting spring motor driven vehicle. 3,750,328, Cl. 46-1.00k.
Nikka Kabushiki Kaisha: *See*—
Saito, Shiro, 3,750,948.
Nilsson, Jan, to Allmanna Svenska Electriska Aktiebolaget. Method of manufacturing rod, wire or tube shaped products of compound material by means of hydrostat extrusion. 3,750,264, Cl. 29-474.300.
Nilsson, Vilgot Raymond, to Alfa-Laval AB. Control means for self-discharging centrifuge. 3,750,940, Cl. 233-19.00a.
Nippon Denon Co., Ltd.: *See*—
Tanaka, Matsuo, 3,750,638.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ishida, Yoshikatsu, 3,751,055.
Nippon Hoso Kyokau: *See*—
Sakata, Haruo; Tanimura, Hiroshi; Kaneko, Ryuichi; Kusaka, Hideo; Sato, Eiichi; and Kubo, Tokuji, 3,751,581.
Nippon Kabushiki Kaisha: *See*—
Fujii, Seiji; Kuwamoto, Hiroshi; Ishida, Masayuki; and Kamata, Masamoto, 3,750,437.
Nippon Oil Company, Ltd.: *See*—
Fujiso, Tokuo; and Ohmori, Tadashi, 3,751,508.
Nishino, Hisashi, to Minolta Camera Kabushiki Kaisha. Color separation optical system. 3,751,133, Cl. 350-54.000.
Nishita, Sadao: *See*—
Hotta, Tetsuya; Takabe, Reiho; and Nishita, Sadao, 3,751,389.
Nishizuka, Hiroshi: *See*—
Sakamoto, Yuzaburo; Nishizuka, Hiroshi; and Kawai, Kakutaro, 3,750,926.
Nissan Motor Company: *See*—
Mizuno, Yukio; and Oguro, Takeshi, 3,750,715.
Nissan Motor Company, Limited: *See*—
Nakajima, Yasuo; and Etoo, Yukihiro, 3,750,634.
Nambu, Shyuya, 3,750,401.
Ohtsuka, Kunio; and Ishimaru, Wataru, 3,750,783.
Nitz, Rolf-Eberhard: *See*—
Stachel, Adolf; Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,751,413.
NL Industries, Inc.: *See*—
Bush, Fred J., Jr., 3,751,669.
Nojiri, Howard H., to Honeywell, Inc. Electrical wiring bushing with strain relief. 3,751,579, Cl. 174-153.00g.
Nolan, Clyde E., Jr., to Brown & Root, Inc. Internal tensioning system for laying pipeline. 3,750,451, Cl. 72-393.000.
Nolte, Gunther. Material conveyors. 3,750,864, Cl. 198-201.000.
Nomura, Junichi; and Andoo, Takemitsu, to Asahi Kasei Kogyo Kabushiki Kaisha. Wads for charging shot of shot gun. 3,750,580, Cl. 102-42.00c.
Noranda Metal Industries, Inc., mesne: *See*—
French, Fred W., 3,750,709.
Nordgren, John Lennart, to U.S. Philips Corporation. Arrangement in an electrical fuse for projectiles. 3,750,588, Cl. 102-70.20p.
Nordischer Maschinenbau Rud. Baader: *See*—
Wick, Helmut, 3,750,827.
Nordisk Ventilator Co. Aktieselskab: *See*—
Peill, Jurgen Eberhardt; Gerritse, Alf; Osmera, Miroslav S.; and Andersen, Christian Karmark, 3,750,557.
Nordmann, Edwin; and Erler, Gerhard, to VEB Werkzeugmaschinenkombinat "Fritz Heckert" Karl-Marx-Stadt. Measuring machine. 3,750,295, Cl. 33-174.001.
Norland, Kenneth S.: *See*—
Duckler, Sheldon; Kennedy, David P.; and Norland, Kenneth S., 3,751,656.
Norman, Charles R., to Harris-Intertype Corporation. Method of heating adhesive applicator roll. 3,750,746, Cl. 165-111.00r.
Norman, Noah M., to Altamil Corporation. Corner construction for vehicle trailers. 3,751,105, Cl. 296-28.00m.
Norris Industries, Inc.: *See*—
Sanders, Vernard W., 3,750,433.
Sanders, Vernard W.; and Potter, Dennis G., 3,751,085.
Norrish, Margaret Evelyn: *See*—
Sharp, Herbert John; and Norrish, Margaret Evelyn, 3,750,450.
North American Rockwell Corporation: *See*—
Babington, Robert S.; and Velie, Wallace W., 3,751,210.
Etchell, Gordon; and Washchynsky, Bohdan, 3,750,572.
Fitzgibbons, Eugene T.; and Slowinski, Raymond P., 3,751,137.
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Norton Company: *See*—
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Nosco Plastics, Incorporated: *See*—
Campbell, Robert H.; and Cloyd, Harold S., 3,750,598.
Notaro, Peter J. Appointment board. 3,750,313, Cl. 40-63.000.
Nowak, Roger L. Funnel. 3,750,722, Cl. 141-332.000.
Nozake, Hiroshi; and Yamazaki, Masaki, to Stanley Electric Co., Ltd. Method for electrolytically forming a coating of titanium-alkaline earth metal compound oxide. 3,751,349, Cl. 204-56.00r.
N.V. Industrieele Handelscombinatie Holland: *See*—
den Hartog, Willem Cornelis, 3,750,408.
Nyquist, Richard A.; and Reder, Thomas L., to Dow Chemical Company, The. Substituted 3,5,6-trihalo-2-pyridyl carbonates. 3,751,421, Cl. 260-295.00r.
Oberg, Robert S.: *See*—
Baker, Donald J.; Gartner, Stanley J.; and Oberg, Robert S., 3,750,278.
O'Brian, John Leslie; Finnimore, Bryan; and Hogg, John Arthur. Pipe joints. 3,751,078, Cl. 285-339.000.
Ockerman, John B.: *See*—
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Ogawa, Hiroshi; Suzuki, Toshi; Suzuki, Tadashi; and Tanaka, Mitsuaki, to Victor Company of Japan Ltd. Magnetic head having multiple head cores. 3,751,599, Cl. 179-100.0zc.
Ogawa, Toshiya, to Kabushiki Kaisha Ricoh. Device for controlling the feeding of copy sheets to a small offset printing machine. 3,750,566, Cl. 101-144.000.
Ogren, John R.: *See*—
Blumenthal, Jack L.; Carroll, David F.; and Ogren, John R., 3,751,295.
Oguro, Takeshi: *See*—
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O'Hara, Mark J., to Universal Oil Products Company. Method of preparing a catalyst. 3,751,380, Cl. 252-439.000.
O'Hara, Mark J., to Universal Oil Products Company. Method of preparing a catalyst for the hydrofining of residual oils. 3,751,383, Cl. 252-455.00r.
Ohio State University, The: *See*—
Michenko, Hildegard M.; and Tyler, Hubert Thomas, 3,751,012.
Ohlhauser, Ernest T.: *See*—
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Ohmori, Tadashi: *See*—
Fujiso, Tokuo; and Ohmori, Tadashi, 3,751,508.
Ohsol, Ernest Osborne; and Perlmutter, Arthur, to American Cyanamid Company. Disposal of thermoplastic materials. 3,750,600, Cl. 110-1.00r.
Ohtani, Yoshio; and Kakijima, Todomu, to Diesel Kiki Kabushiki Kaisha. Electronic governor for fuel-injection type internal combustion engines. 3,750,633, Cl. 123-102.000.
Ohte, Akira; and Tamuki, Minoru, to Yokogawa Electric Works, Ltd. Analog control system with plural states having a common power source arrangement and means for eliminating error voltages arising therefrom. 3,751,675, Cl. 307-34.000.
Ohtsuka, Kunio; and Ishimaru, Wataru, to Nissan Motor Company, Limited. Overrunning clutch for use in an automotive power transmission. 3,750,783, Cl. 192-45.000.
Okada, Tomio: *See*—
Yabe, Shinichi; and Okada, Tomio, 3,751,665.
Okamoto, Osami, to Matsushita Electric Industrial Co., Ltd. Piezoelectric ignition apparatus. 3,751,690, Cl. 310-8.700.
Okamoto, Takehiko: *See*—
Okasaka, Hotuma; Okamoto, Takehiko; Hirai, Toshimasa; Inoue, Masakazu; and Asama, Akira, 3,751,526.
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Okazaki Manufacturing Company: *See*—
Mochizuki, Mitsuaki; Tanaka, Minoru; and Koyama, Tadataka, 3,750,968.
O'Keefe, Jack Victor. Gimbal-mounted game board titable by control stick. 3,751,038, Cl. 273-110.000.
Oken, Aaron. Inorganic protective coatings. 3,751,275, Cl. 106-90.000.
Okumura, Takuzo: *See*—
Tabana, Minoru; Okumura, Takuzo; and Yasuno, Kiyoshi, 3,751,388.
Okura, Takao, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for the control of fuel injection for an internal combustion engine. 3,750,636, Cl. 123-140.0mp.
Olechowski, Jerome Robert, to Cities Service Company. Oximino cyclic hydrocarbons. 3,751,468, Cl. 260-566.00a.
Olin Corporation: *See*—
Digirolamo, William J., 3,750,639.
Shum, John, Jr., 3,750,784.
Smith, Lester E.; and Lin, Chao H., 3,750,785.
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Olivares, Ismael A.: *See*—
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Olivetti, Ing., C., & C., S.p.A.: *See*—
Pomella, Piero; and Lauro, Luciano, 3,751,651.
Olson, Percy Dean, to Musitronic Inc. Multiple keyboard apparatus. 3,750,516, Cl. 84-470.000.
Olson, Rodney I. Electrostatic mist precipitator. 3,750,373, Cl. 55-146.000.
Olstowski, Franciszek, to Dow Chemical Company, The. Process of forming polyurethanes with inorganic hydrated metal salts. 3,751,392, Cl. 260-2.5ab.
Olt, Richard G.: *See*—
Coleman, Harold L.; Malson, Harold A.; Du Four, Howard R.; and Olt, Richard G., 3,751,668.
Olympia Werke AG: *See*—
Bettin, Hubertus, 3,750,564.

Omsteel Industries, Inc.: *See*—
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Ono Pharmaceutical Co., Ltd.: *See*—
Fujii, Seisuro; and Watanabe, Tsuyoshi, 3,751,447.
Ono, Yusuke: *See*—
Yanagisawa, Takeshi; Tanikoshi, Kinzi; and Ono, Yusuke, 3,750,540.
Oose, Katsuhiro: *See*—
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Ord, Lewis R. Small wood sawmill. 3,750,727, Cl. 144-312.000.
Orfei, Louis A. Self-propelled trench-shoring apparatus. 3,750,409, Cl. 61-41.00a.
Organ, Allan John; and Price, Clifford Gerald, to University of Birmingham, The. Billet production. 3,750,505, Cl. 83-54.000.
Orth, Harold R.: *See*—
Lech, Richard J.; Ziskal, Joseph F.; Jennings, Marvin D.; Orth, Harold R.; and Virtue, Eugene P., 3,750,405.
Osieka, Hans; Koenig, Karl Heinz; Bolz, Gerhard; and Amann, August, to Badische Anilin & Soda-Fabrik Aktiengesellschaft. 1-Methyl-and 1-ethylthioethylcarbamoyl-substituted benzamidazoles. 3,751,425, Cl. 260-309.200.
Osmera, Miroslav S.: *See*—
Peill, Jurgen Eberhardt; Gerritse, Alf; Osmera, Miroslav S.; and Andersen, Christian Karmark, 3,750,557.
Oster, Frederick W.: *See*—
Maeder, Roger A.; Oster, Frederick W.; and Soderman, Richard J., 3,751,647.
Osterreichische Studiengesellschaft fur Atomenergie Ges. m.b.H.: *See*—
Balcarczyk, Leopold, 3,750,576.
Ostradyne, Inc.: *See*—
Ostrander, Robert F., 3,750,464.
Ostrander, Robert F., to Ostradyne, Inc. Dynamometer apparatus for cleated vehicles. 3,750,464, Cl. 73-117.000.
O'Sullivan, David D.: *See*—
White, Marvin H.; O'Sullivan, David D.; and Hamel, Richard G., 3,750,583.
Oswald, Alexis A.; and Schmit, George N., to Esso Research and Engineering Company. Free radical addition of dithiophosphonic and dithiophosphinic acids to acetylenes. 3,751,530, Cl. 260-978.000.
Otis, Charles V.: *See*—
Schaffart, Raymond H.; and Otis, Charles V., 3,751,070.
Ott, William C.; and Dionne, Leo Paul, to Niagara Wire Weaving Company, Limited. Device for measuring the tension of extended flexible materials. 3,750,466, Cl. 73-159.000.
Ottaccini, Manfred R.: *See*—
Gleason, Donald M.; Ottaccini, Manfred R.; and Reilly, Robert J., 3,750,647.
Ottich, Robert, to Strobel, J., & Sohne. Process for joining the sleeve lining in sack coats and like garments to the shoulder pads in the arm socket and construction formed thereby. 3,750,602, Cl. 112-267.000.
Otto, Charles W., to General Electric Company. Method for producing a resilient mounting arrangement for rotating machines. 3,750,267, Cl. 29-507.000.
Otto, Franz: *See*—
Cobarg, Christian; Fenner, Erich; Guntersdorfer, Max; Heywang, Walter; Otto, Franz; Schofer, Rudolf; and Thomann, Helmut, 3,750,279.
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Haft, Gerald; and Holtermann, Theodore J., 3,750,615.
Outdoor Sports Industries, Inc.: *See*—
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Ouwerkerk, Johannes H. W.: *See*—
Cramer, Rudolph E.; Van Der Viliet, Cornelis; and Ouwerkerk, Johannes H. W., 3,750,629.
Ovarnstrom, Bengt Gustav Lennart. Sowing machine for dispensing seeds unto seed beds. 3,750,832, Cl. 221-211.000.
Owen, Archibald A.: *See*—
Lloyd, Neil E.; Owen, Archibald A.; and Brenner, David C., 3,750,242.
Owen, Ronald C., to Illinois Tool Works Inc. Container carrier. 3,751,098, Cl. 294-87.200.
Owens, Abner, Jr.; and Weinstein, Donald, to Bendix Corporation, The. Means for conserving energy during line retrace of a raster type display. 3,751,706, Cl. 315-27.0td.
Owens-Illinois, Inc.: *See*—
Dietrich, Heinz J.; and Steiger, Edward L., 3,751,467.
Scotto, Victor Edward; and Blackwelder, Maurice W., 3,751,537.
Oxenrider, Bryce C.; Woolf, Cyril; and Beyleveld, Wilhelmus M., to Allied Chemical Corporation. Method of preparing fluoroperhalozaolefins. 3,751,469, Cl. 260-566.00r.
Oxlade, Roy R., to British Iron and Steel Research Association, The. Twin stand rolling mill-azial roll alignment. 3,750,448, Cl. 72-247.000.
Oxley, David Fairclough, to Imperial Chemical Industries, Limited. Process for the production of laminar cellular articles. 3,751,534, Cl. 264-45.000.
Oxy Metal Finishing Corporation: *See*—
Minbiole, Louis J., Jr.; Clark, Chester G.; and Neumann, John W., 3,751,297.
Pacific Technica Corporation: *See*—
Feldman, Fritz K., 3,750,585.
Packer, Louis L.; Bruton, William A.; and Woody, Bernard A., to United Aircraft Corporation. Engine oil inspection system using X-ray fluorescence. 3,751,661, Cl. 250-272.000.
Paddy McDonnell (Proprietary) Limited: *See*—
Venter, Pieter Lawrence, 3,750,772.
Palanos, Paul N.; and Unterleitner, Fred C., to Medoptics, Inc., mesne. Laser cauterizer. 3,750,670, Cl. 128-303.100.
Paleologo, Teo: *See*—
Fonzi, Giorgio; Paleologo, Teo; and Toso, Giorgio, 3,751,329.
Pallos, Laszlo: *See*—
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Pals, Donald T.: *See*—
Sipos, Frank; Pals, Donald T.; and Denning, George S., Jr., 3,751,404.
Pandjiris, Anthony K.; and Cooper, Cleveland N., to Pandjiris Weldment Co., The. Ladder assembly. 3,750,844, Cl. 182-121.000.
Pandjiris Weldment Co., The: *See*—
Pandjiris, Anthony K.; and Cooper, Cleveland N., 3,750,844.
Panther Plast A/S: *See*—
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Papenfuss, Theodor; Rehberg, Rolf; and Spietschka, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Pigment compositions and process for preparing them. 3,751,279, Cl. 106-288.00q.
Pappo, Raphael: *See*—
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Parker, Richard J., to United States of America, National Aeronautics and Space Administration. Low mass rolling element for bearings. 3,751,123, Cl. 308-193.000.
Parker, Trevor: *See*—
Caton, Michael Peter; Parker, Trevor; and Watkins, Gordon Leonard, 3,751,463.
Partyka, Henryk; Jankowski, Stanislaw; and Manka, Jerzy. Method of band-system hardening of thin-walled steel products, particularly of scrapper conveyor troughs, and the device for implementation of this method. 3,751,018, Cl. 266-4.00e.
Partzsch, Peter, to Dornier A.G. Flow sonde for measuring the total pressure and the static pressure of a flow. 3,750,470, Cl. 73-212.000.
Pascale, John V.: *See*—
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Pascquet, Adrien, to Commissariat a l'Energie Atomique. Pneumatic machine for the creation of mechanical shocks of variable amplitude and intensity. 3,750,457, Cl. 73-12.000.
Pase, Glenwood K.: *See*—
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Pasquali, Joseph W.: *See*—
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Patchett, Arthur A.: *See*—
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Patel, Bhupendra C., to Kendall Company, The. Container drainage valve. 3,750,914, Cl. 222-543.000.
Patels, Gottfried; and Beck, Erich, to Vockenhuber, Karl and Hauser, Raimund. System for deriving television signals from holographic and non-holographic records. 3,751,589, Cl. 178-5.40r.
Pater, Richard: *See*—
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Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich. Plant for the electroslag remelting of metal. 3,751,572, C. 13-9.000.
Patrick, Robert F.: *See*—
Nelson, Michael A.; Patrick, Robert F.; and Wehrenberg, Thomas M., 3,751,273.
Patten, Dan H., Jr. Apparatus for forming and handling roof tiles. 3,751,205, Cl. 425-253.000.
Patterson, Charles C. Transport system for bacteria with provisions for carbogenophilic organisms. 3,750,646, Cl. 128-2.00b.
Patterson, Roger Lee; and Isachsen, Henning, to Deere & Company. Hitch structure for agricultural implements. 3,751,071, Cl. 280-478.00a.
Patterson, William L.: *See*—
Shirn, George A.; Miller, Norman Carlile; and Patterson, William L., 3,751,723.
Paugh, James J.; and Pollari, Theodore J., to Warren Pumps, Inc. Pump. 3,751,178, Cl. 415-56.000.
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Pausky, Paul A., to Dresser Industries, Inc. Tubing swage utilizing explosives. 3,750,440, Cl. 72-56.000.
Paxton, Lee C. Rapid transportation system. 3,750,803, Cl. 214-38.0cc.
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Pearl, David R.: *See—*
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Peasley, Douglas W. Adapter for lathe. 3,750,499, Cl. 82-39.000.

Pecherer, Benjamin: *See—*
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Peddinghaus, Carl Ullrich. Hydro-pneumatic piston and cylinder damping device. 3,750,855, Cl. 188-269.000.

Peek, Hermanus Leonardus: *See—*
Eversteijn, Franciscus Cornelis; and Peek, Hermanus Leonardus, 3,750,620.

Peeso, James Bruce, Jr.; and Murfitt, Donald, to American Cyanamid Company. Fabrication of plastic spinnerettes by means of stacked mandrels. 3,751,545, Cl. 264-162.000.

Pegram, John B.: *See—*
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Peill, Jurgen Eberhardt; Gerritse, Alf; Osmera, Miroslav S.; and Andersen, Christian Karmark, to Nordisk Ventilator Co. Aktieselskab. System for the ventilation of buildings. 3,750,557, Cl. 98-33.000.

Penetryn Systems Inc.: *See—*
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Penrock, William B. Brassiere structure. 3,750,673, Cl. 128-465.000.

Pentegrov, Igor Vladimirovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.

Pepper, Orlyn G. Web tensioner and guide system. 3,750,924, Cl. 226-174.000.

Perfil En Frio, S.A.: *See—*
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Perl, Richard L., to Tappan Company, The. Heat system for dishwasher. 3,750,951, Cl. 239-139.000.

Perl, Theodore. Apparatus with disposable parts for rapid successive administration of enemas to groups of patients. 3,750,668, Cl. 128-227.000.

Perlmutter, Arthur: *See—*
Ohsol, Ernest Osborne; and Perlmutter, Arthur, 3,750,600.

Perry, Eli: *See—*
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Perry, John H.: *See—*
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Pessen, David W., to Gulf & Western Systems Company. Composite roll. 3,750,246, Cl. 29-130.000.

Pessier, Rudolf Carl Otto, to Hughes Tool Company. Rolling cutter mounting in big hole reaming bit. 3,750,767, Cl. 175-53.000.

Petersilka, Ernest: *See—*
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Peterson, Aivars V.: *See—*
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Peterson, Alton. Dowel pin extractor tool. 3,750,500, Cl. 81-52.350.

Peterson, Dean M.; and Neukirchner, Peter H., to Honeywell, Inc. Universal camera flash sensor bracket. 3,751,652, Cl. 240-1.300.

Peterson, Hal D., to Molyhdenum Corporation of America. Solvent extraction process for the recovery of molybdenum and rhenium from molybdenite. 3,751,555, Cl. 423-49.000.

Peterson, James Thomas; and Shida, Mitsuzo, said Peterson assor. to American Can Company and said Shida assor. to Chemplex Company. Method for preparing a dimensionally stable waxed polyethylene sheet. 3,751,281, Cl. 117-7.000.

Peterson, John Merriam: *See—*
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Petersson, Ralf Krister Ebbe: *See—*
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Petrolite Corporation: *See—*
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Redmore, Derek; and Welge, Frederick I., 3,751,371.

Petrovsky, Peter; and Bohm, Max, to Licentia Patent-Verwaltungs-GmbH. Distributor for rectangular flat items. 3,750,880, Cl. 209-74.00r.

Petterson, Tor H., to Hoffman Electronics Corporation. Audio visual display apparatus. 3,751,151, Cl. 353-19.000.

Petzetakis, Nicholas George, to Hellenic Plastics and Rubber 'ndustry N & M Petzetakis S.A. Apparatus for production of polymeric foam. 3,751,197, Cl. 425-4.000.

Peuchen, Inc.: *See—*
Peuchen, Wilfred S.; and Pase, Glenwood K., 3,750,415.

Peuchen, Wilfred S.; and Pase, Glenwood K., to Peuchen, Inc. Method and apparatus for drying a gas and chilling it to low temperatures. 3,750,415, Cl. 62-93.000.

Pfeifer, Georg. Life preserver. 3,750,205, Cl. 99-345.000.

Pfeifer, Josef; Hofmann, Wilfried; and Dietrich, Karl-Heinz, to Agfa-Gevaert Aktiengesellschaft. Microfilm coding method and apparatus. 3,750,553, Cl. 95-1.100.

Pfizer Inc.: *See—*
Cross, Peter E.; Stichbury, James R.; and Thorpe, Eric F., 3,751,470.
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Phillips, Kein James, to Conzinc Riotinto of Australia, Limited. Fluid cooled lance. 3,751,019, Cl. 266-34.001.

Phillips, Kenneth G.; and Geerts, Marcellus J., to Nalco Chemical Company. Method of preparing non-toxic polyamines. 3,751,474, Cl. 260-583.00p.

Phillips, Morton; and Klenosky, Robert. Educational device. 3,750,307, Cl. 35-35.00j.

Phillips Petroleum Company: *See—*
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Piasek, Edmund J.; and Karll, Robert E., to Standard Oil Company. Concentrates and crankcase oils comprising oil solutions of boron containing high molecular weight mannich reaction condensation products. 3,751,365, Cl. 252-49.600.

Pickering, Royce D.; and Glassman, David M., to Eastman Kodak Company. Television signal to photographic film recording system. 3,751,584, Cl. 178-6.70a.

Pienkny, Dieter: *See—*
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Piercey, Robert D. Traffic cone retriever. 3,750,900, Cl. 214-6.00b.

Pineau, Andre Lucien. Shock and vibration damper. 3,751,024, Cl. 267-153.000.

Pinkerton, Lyle C. Lifting mechanism for inboard-outboard boat drive. 3,750,617, Cl. 115-41.00r.

Piquerez, Ervin; deceased (by Scholler, Ami; and Bandflier, Edouard; executors). Leakage indicator for evacuated and pressurized watchcases. 3,750,387, Cl. 58-90.00b.

Piquerez, Ervin. Hermetic watch case. 3,750,388, Cl. 58-90.00r.

Pitney-Bowes, Inc.: *See—*
Hubbard, David W.; and Eckert, Alton B., Jr., 3,750,565.

Platt, John D., to MSI Data Corporation. Magnetic tape transport. 3,751,042, Cl. 274-4.00c.

Pleasance, Charles A., to GTE Automatic Electric Laboratories Incorporated. Method of control of line circuit cutoff relay. 3,751,607, Cl. 179-175.20r.

Plessey Handel und Investments A.G.: *See—*
Bishop, William Dennis, 3,750,276.

Poffenberger, Noland; and Watson, William David, to Dow Chemical Company, The. Transmethylation process. 3,751,484, Cl. 260-612.00r.

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Polaroid Corporation: *See—*
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Land, Edwin H.; and Carcia, Peter P., 3,750,551.
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Pollack, Dale, to Aerosonic Corporation. Altitude encoder. 3,750,474, Cl. 73-386.000.

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Pomernacki, Henry, to Illinois Tool Works Inc. Methods and machines for assembling washer members with rotary fastener members. 3,750,206, Cl. 10-155.00a.

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Powers, La Verne Jane: *See—*
Powers, Samuel Doston, 3,750,738.
Powers, Samuel Doston, to Powers, La Verne Jane and Powers, Bruce Wayne. Drapery support system. 3,750,738, Cl. 160-342.000.
PPG Industries, Inc.: *See—*
Seyferth, Dietmar, 3,751,495.
Prahl, Frederick A., Jr.; and Dunlap, Robert B., to Compo Industries, Inc. Method of making a mold for reproducing parts of shoes and the like. 3,751,540, Cl. 264-90.000.
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Williams, Robert G.; Howard Lawrence W.; Thompson, Richard J.; Prater, Johnny L.; and Ryder, Steven P., 3,750,459.
Prather, Alfred G. B. Man-powered glider aircraft. 3,750,981, Cl. 244-16.000.
Pratt & Whitney Inc.: *See—*
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Kindl, George F.; and Michaud, Orean E., 3,750,296.
Pratt, Henry, Company: *See—*
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Prentice, Winslow W., to United States of America, Navy. Low loss electrical conductive coating and bonding materials including magnetic particles for mixing. 3,750,243, Cl. 29-25.350.
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Organ, Allan John; and Price, Clifford Gerald, 3,750,505.
Prieur, Lucien Robert; and Rousseau, Hubert Cecyl Albert, to Societe Industrielle Honeywell Bull (Societe Anonyne). Device for controlling magnetic head displacement. 3,751,603, Cl. 179-100.0ca.
Princeton Biomedix Incorporated: *See—*
Nichols, Joseph, 3,751,562.
Printy, Helen C.; and Baltazzi, Evan S., to Addressograph-Multigraph Corporation. Photoconductive elements employing N-vinyl carbazoles having fused condensed arenic ring structures. 3,751,246, Cl. 96-1.500.
Prischi, Guido, to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude. Apparatus for initiating and stabilizing a welding arc. 3,751,627, Cl. 219-131.00r.
Pro-Tech, Inc.: *See—*
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Morgan, George, Jr., 3,750,962.
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Proctor, Sidney E., to Hoy, Austin, and Company, Limited. Tools and holders therefor. 3,751,115, Cl. 299-92.000.
Production Technology Inc., mesne: *See—*
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Pshenichny, Nikolai Fedorovich; and Maximov, Valentin Dmitrievich. Device for intraosseous injection of liquid substances. 3,750,667, Cl. 128-215.000.
Pugh, Algernon Walter; and Morewood, Charles Alan, to GKN Transmissions Limited. Method and apparatus for setting a diaphragm spring. 3,750,251, Cl. 29-173.000.
Pullman Incorporated: *See—*
Jones, Waymond R., 3,750,352.
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Putnam, Allen L. Fishing fly with snagproof hook. 3,750,322, Cl. 43-42.250.
Putscher, Johann; Gersch, Josef; Wiedemann, Otto; and Winkler, Alfred, to Agfa-Gevaert AG. Container for photographic film. 3,750,542, Cl. 95-31.0ca.
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Pyle, John David, Jr. Concrete resonant cone speaker system. 3,750,838, Cl. 181-31.00b.
Quentin, Jean-Pierre, to Rhone-Poulenc S.A. Ionic polymers. 3,751,376, Cl. 260-2.10r.
Quirk, Robert W., to Rheem Fluid Systems, Inc. Flanged body with flange reinforcing ribs. 3,751,004, Cl. 251-366.000.
Quittner, George P. Radiation path continuity transducer of high pass frequency. 3,751,667, Cl. 250-351.000.
Rabe, Karl Lars Gunnar; and Hanaeus, Karl Sune Ingemar, to Aktiebolaget Arboga Mekaniska Verkstad. Arrangement in storage type wire drawing machines for continuously controlling the speed of an individually driven drawing block having an associated guide bock arranged coaxially therewith and a guide pulley arranged between the blocks. 3,750,449, Cl. 72-288.000.
Radcliffe, Jerry K.; and Whalen, Gerald W., to International Business Machines Corporation. Zero skew clock distribution system. 3,751,591, Cl. 178-68.000.
Radlauer, Marvin I.: *See—*
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Ragir, Meyer J. Suction mounting device. 3,750,991, Cl. 248-206.00r.
Ragsdale, Charles W., to United States of America, Army. Cardiac programmer for a coronary blood pump. 3,750,644, Cl. 128-1.00d.
Raidel, John E., to Ridwell Corporation. Multiple joint tandem suspension with torque springs. 3,751,063, Cl. 280-104.50a.
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Rakestraw, Lawrence F., to Monsanto Company. Method for improved extrusion of essentially inviscid jets. 3,750,741, Cl. 164-82.000.
Ramsey, James C. Collapsible bow arm rest. 3,750,641, Cl. 124-23.000.
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Nettleton, David John, 3,750,424.
Rankel, Lillian Ann, to Bell Telephone Laboratories, Incorporated. Silicon semiconductor device processing. 3,751,314, Cl. 156-17.000.
Raphael, Osmond Philip. Lens edging machine for fitting spectacle lenses. 3,750,344, Cl. 51-97.00r.
Rapistan, Inc.: *See—*
Daigle, Jack R.; Haregger, James D.; Zollinger, Howard A.; and Vander Meer, Clayton H., 3,751,640.
Rasconi, Alexandre. Method for burning liquids. 3,751,211, Cl. 431-9.000.
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Einthoven, Willem Gerard; and Wheatley, Carl Franklin, Jr., 3,751,726.
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Reed, James N., to Copes-Vulcan, Incorporated. Soot blower. 3,750,230, Cl. 75-317.000.
Reed, Jerry A.; Van Delden, Ronald; Maruko, Shuji U.; Garner, George E.; Ryan, Stanley; Waring, Winfred F.; Klein, Jacob; Schmidt, Herman W., Jr.; and Friedrich, Simon, to United States of America, Army. Multishot portable launching apparatus. 3,750,529, C. 89-1.800.
Reft, Allen B.; and Berk, William E., Jr. Anti-pollution ventilation system for spray-type coating chambers. 3,750,622, Cl. 118-326.000.
Regie Nationale des Usines Renault: *See—*
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Rinaldo, James D., to Caterpillar Tractor Company. Filter assembly. 3,750,888, Cl. 210-172.000.
Rinehart, Louis P., to Morgan, R. A., Co., Inc. Microfilm reader apparatus with automatic updating display means. 3,751,152, Cl. 353-26.000.
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Rizzi, George P., to Procter & Gamble Company, The. Sugar compositions containing aglyconic dihydrochalcones. 3,751,270, Cl. 99-141.00a.
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Rodwin, Stephen Anthony; and Descary, John Gilbert, to Dominion Engineering Works, Limited. Sonic drying of webs on rolls. 3,750,306, Cl. 34-69.000.
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Rohm & Haas Company: *See*—
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McNulty, Patrick J.; Swithenbank, Colin; Viste, Kenneth L.; and Von Meyer, William C., 3,751,239.

Rohr Industries, Inc.: *See*—
Anderson, Byron C., 3,750,592.

Roll, William D., to University of Toledo, The. N-Substituted-N'-cycloalkyl-nitrobenzamides. 3,751,464, Cl. 260-558.00r.

Roller, Gilbert. Synchronizing device. 3,751,142, Cl. 352-12.000.

Roller-Werke Franke & Heidecke: *See*—
Waaske, Heinz, 3,750,549.

Rolls-Royce Limited: *See*—
Britt, Jack, 3,750,689.
Morris, Geoffrey William, 3,750,983.

Roman, Robert J.: *See*—
Bundschuh, John J.; and Roman, Robert J., 3,750,976.

Roman, Robert R., to Gravure-Flex Packaging Corporation. Cooking and sterilizing bag and a bag roll. 3,750,873, Cl. 206-59.00r.

Romanov, Rudolf Alexeevich: *See*—
Ivanov, Alexandr Pavlovich; and Romanov, Rudolf Alexeevich, 3,750,496.

Romes, Romand: *See*—
Leutner, Volkmar; and Romes, Romand, 3,750,534.

Roosa, Vernon D. Flushing device. 3,750,195, Cl. 4-45.000.

Root, Wayne N.: *See*—
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Rosefelder, Andre Marcel: *See*—
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Rosenberg, Peretz. Coupling members for plastic pipes and fittings useful therewith. 3,751,075, Cl. 285-61.000.

Rosenfeld, Jon P., to Massachusetts Institute of Technology. Synchronized sound and picture film recording and projecting system. 3,751,143, Cl. 352-12.000.

Rosenthal, Walter. Combination of a chair and pedaling device. 3,751,033, Cl. 272-58.000.

Rosinger, Sigurd: *See*—
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Rosocha, Bruno. Combination of a yacht mop and scrubbing pad. 3,750,218, Cl. 15-118.000.

Ross, Donald L.: *See*—
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Rossi, Eugene F., to Allis-Chalmers Corporation. Fluid delivery system for rotary kiln. 3,751,220, Cl. 432-115.000.

Rossomme, Paul L., to General Tire & Rubber Company, The. Method and apparatus for cleaning cured sponge rubber extrusion. 3,750,229, Cl. 15-304.000.

Roth, Albert L., to Becton, Dickinson and Company. Carton. 3,750,930, Cl. 229-17.00b.

Roth, Charles: *See*—
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Roth, Paul R. Mechanical method of forming concrete via suspension. 3,751,532, Cl. 264-31.000.

Rotier, Donald J., to Honeywell Inc. Fail-safe monitoring apparatus. 3,751,679, Cl. 307-204.000.

Roto-Werke GmbH: *See*—
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Rousseau, Hubert Cecyl Albert: *See*—
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Rowan, Richard L.: *See*—
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Rowland Development Corporation: *See*—
Nauta, Jan P., 3,751,550.

Roy, Robert E., to Colt Industries Operating Corporation. Firing pin stop for a firearm. 3,750,319, Cl. 42-70.00f.

Rubio, Manuel Jesus; and Leal, Victor Mario, to Barrera, Roberto Gonzalez. Device to measure compressibility of soft materials. 3,750,467, Cl. 73-169.000.

Ruckert, Hans; Kramer, Heinz; and Agustein, Gustav, to Kalle Aktiengesellschaft. Process for the production of reprographic materials by deposition a light-sensitive layer by evaporation. 3,751,285, Cl. 117-34.000.

Rudszinat, Willy: *See*—
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Rummel, Werner: *See*—
Michel, Alfred; and Rummel, Werner, 3,751,672.

Ruoti, Vincenzo; and Farioli, Felice, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa. Preparation of moulding compositions containing glass fibers. 3,751,535, Cl. 264-141.000.

Rusco Industries, Inc.: *See*—
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Rusher, Robert L.: *See*—
Beyer, James N.; Moore, Earl P., Jr.; and Rusher, Robert L., 3,751,276.

Russell, Dolores M. Artificial nail and method of applying the same. 3,750,684, Cl. 132-88.500.

Russell, John Patrick: *See*—
Harrison, Robert Henry; Russell, John Patrick; and Middleton, Anthony Edward, 3,750,436.

Ruther, Clarence E.; and Sullivan, Patrick D., said Ruther assor. to said Sullivan, Patrick D. Power mechanism. 3,750,851, Cl. 188-26.000.

Rutkowski, Michael D.; and Thompson, Richard R., to Pro-Tech, Inc. Liquid sampling. 3,750,477, Cl. 73-421.00b.

Rutney, Richard Knight, to Hercules Incorporated. Crystalline nickel chelate of 1-nitroso-2-naphthol and process for producing same. 3,751,439, Cl. 260-439.00r.

Ruttgers, Helge, to Hewlett-Packard GmbH. Double spiral electrode for intra-cavity attachment. 3,750,650, Cl. 128-2.06e.

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Calizzano, Fernand; Chauvel, Michel; Malliere, Jean; and Rybner, Jean, 3,751,604.

Rychlewski, Thaddeus; and Wanner, Louis R., to GTE Sylvania Incorporated. Multiplex image accommodation system. 3,751,593, Cl. 178-7.200.

Ryder, Geoffrey Alan; trading as Design Link: *See*—
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Ryder, Steven P.: *See*—
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Saddler, William R.: *See*—
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Saetti, Renato, to Fiat Societa per Azioni. Control devices for agricultural tractor implements. 3,750,757, Cl. 172-9.000.

Saimin, Valery Vasilievich: *See*—
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.

Saito, Shiro, to Nikka Kabushiki Kaisha. Apparatus for depositing powdered substance on the inner surface of inflation tube. 3,750,948, Cl. 239-15.000.

Sakai, Masaaki: *See*—
Minami, Keiichi; Susami, Kozo; and Sakai, Masaaki, 3,750,382.

Sakamoto, Yuzaburo; Nishizuka, Hiroshi; and Kawai, Kakutaro, to Hitachi, Ltd. Vibration element for supersonic bonding. 3,750,926, Cl. 228-1.000.

Sakata, Haruo; Tanimura, Hiroshi; Kaneko, Ryuichi; Kusaka, Hideo; Sato, Eiichi; and Kubo, Tokuji, to Nippon Hoso Kyokau. Color television standard system coverting equipment. 3,751,581, Cl. 178-5.460.

Salm, Gerlof Berthy. Apparatus for maintaining the potability of cistern water. 3,750,886, Cl. 210-111.000.

Salvador, Henry J.; and Conner, James M., to Polaroid Corporation. Photographic system employing an improved film handling cassette and cassette-receiving apparatus. 3,751,145, Cl. 352-72.000.

Sameshima, Tadanori: *See*—
Nakai, Susumu; and Sameshima, Tadanori, 3,750,955.

Samour, Carlos M.; and Richards, Mildred C., to Kendall Company, The, mesne. Monomeric emulsion stabilizers derived from alkyl/alkenyl succinic anhydride. 3,751,451, Cl. 260-485.0hn.

Sampo, John J. Insertion tool for tire valve stems. 3,750,258, Cl. 29-221.500.

Sampson, Roy John; Spencer, Christopher Buxton; and Chenoweth, John Garfield. Production of benzene. 3,751,503, Cl. 260-672.00r.

Sand R Associates, Inc.: *See*—
Field, Gregory A., 3,750,611.

Sanders Associates, Inc.: *See*—
Hayner, Paul F., 3,750,710.
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Sanders, Vernard W., to Norris Industries, Inc. Mortise lock retract mechanism. 3,750,433, Cl. 70-146.000.

Sanders, Vernard W.; and Potter, Dennis G., to Norris Industries, Inc. Incremental dead bolt latch. 3,751,085, Cl. 292-140.000.

Sandoz, Ltd.: *See*—
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Sangiamo, Richard; Roth, Charles; Fox, Edward J.; and Atkin, Leonard, to Keene Corporation. Lighting fixture for high intensity lamps. 3,751,657, Cl. 240-41.35e.

Santacecilia, Remo; and Sherburne, Edwin C., to ICI America Inc. Nonwoven fabrics. 3,751,290, Cl. 117-140.00a.

Santorelli, Salvatore L. Therapeutic compositions. 3,751,565, Cl. 242-80.000.

Sanz, Manuel C.; and Revillet, Georges, to Micromedic Systems, Inc. Flowthrough cuvette. 3,751,173, Cl. 356-246.000.

Sarges, Reinhard, to Pfizer, Inc. 1-Substituted benzoyl-2-trifluoromethylbenzimidazoles. 3,751,428, Cl. 260-309.200.

Sartomer Industries, Inc.: *See*—
Cowperthwaite, George F.; and Cornell, John A., 3,751,378.

Sasaki, Katuyoshi: *See*—
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Satake, Toshihiko. Rotary and flow type rice grain sorter. 3,750,884, Cl. 209-284.000.

Sato, Eiichi: *See*—
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Sato, Masamichi; Fukushima, Osamu; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Apparatus for developing electrophotographic continuous web material. 3,750,624, Cl. 118-637.000.

Sato, Toshio: *See*—
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Satoh, Hideshi: *See*—
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Satzler, Ronald L.: *See*—
Miller, Robert G.; Crayton, John W.; Farmer, Charles G.; and Satzler, Ronald L., 3,750,927.

Satzler, Ronald L.; and Calton, Marion R., to Caterpillar Tractor Company. Method for producing an assembly by friction welding. 3,750,263, Cl. 29-470.300.

Saucy, Gabriel, to Hoffman-La Roche Inc. 2-Hydroxy2-(3-acyl-4-oxoalkyl)-6-vinyltetrahydropyrans and tautomers. 3,751,433, Cl. 260-345.900.

Sauty, Pierre: *See*—
Johannes, Conrad; Carbonnel, Emile; Sauty, Pierre; and Grenier, Maurice, 3,750,417.

Sawada, Takehiko, to Matsushita Electric Industrial Co., Ltd. Turntable support for a record player. 3,751,044, Cl. 274-39.00a.

Saxon, Denver D. Apparatus for cutting elbow sections from pipe. 3,750,506, Cl. 82-101.00r.

Saxon Industries, Inc., mesne: *See*—
Insler, Julius R.; Leslie, Allen R.; and Vigneri, Ronald J., 3,751,587.

Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, to Upjohn Company, The. Radiation-sensitive polymers prepared from hydroxyl containing polymers and 4-azidosulfonyl-phthalic anhydride. 3,751,393, Cl. 260-49.000.

Scandia Packaging Machinery Company: *See*—
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Scannell, James Parnell: *See*—
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Schaefer, F. M. Brewing Company, The: *See*—
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Schaffart, Raymond H.; and Otis, Charles V. Fifth wheel unit. 3,751,070, Cl. 280-432.000.

Schatz, Clifford E.: *See*—
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Scheininger, Ludwig; and Petersilka, Ernest, to Siemens Aktiengesellschaft. Supporting table for patients. 3,751,028, Cl. 269-322.000.

Schering AG: *See*—
Imoehl, Wolfgang; and Borner, Peter, 3,751,445.

Scherl, Peter, to Gebr. Bohler & Co. Aktiengesellschaft. Method for arc welding with overlapped band electroders. 3,751,628, Cl. 214-137.000.

Scherz, Karl. Unloader for removing stock for a body of stock container in a storage space. 3,750,903, Cl. 214-17.0db.

Scheuerman, Ronald F.: *See*—
Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., 3,750,768.

Scheuerpflug, Hans, to Fuchs, Johannes, K.G. Vehicle with individual wheel suspension. 3,751,061, Cl. 280-96.20r.

Schick & Cie: *See*—
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Schick, Georges-Robert, to Schick & Cie. Lighting device for road vehicles. 3,751,711, Cl. 315-83.000.

Schimmel, Vernon R.; and Shoemaker, James C., to Symons Corporation. Three-piece clamp assembly for the braces of scaffolding. 3,751,081, Cl. 287-53.500.

Schink, Norbert, to Siemens Aktiengesellschaft. Semiconductor element. 3,751,306, Cl. 148-33.300.

Schirtzinger, Joseph F., to Air Logistics Corporation. Single point mooring system. 3,750,723, Cl. 141-388.000.

Schlage, Ernest L., to Schlage Lock Company. Electromagnetic lock. 3,751,088, Cl. 292-201.000.

Schlage Lock Company: *See*—
Schlage, Ernest L., 3,751,088.

Schleppnik, Alfred A.; and Wilson, John B., to Monsanto Company. Alkyl-substituted unsaturated acetals. 3,751,486, Cl. 260-615.00r.

Schliebs, Reinhard; and Jonas, Gerhard, to Bayer Aktiengesellschaft. Process for preparing isomeric cyclic 5-membered unsaturated phosphine dihalides. 3,751,460, Cl. 260-543.00p.

Schlkunov, Jury Andreevich: *See*—
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schlkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.

Schlumberger Technology Corporation: *See*—
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Schmadel, Edmund: *See*—
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Schmerling, Louis, to Universal Oil Products Company. Preparation of N-alkylbenzenes. 3,751,498, Cl. 260-668.00d.

Schmidt, Erich A.; and Schmidt, Volker E., to Textron, Inc. Snap attaching apparatus. 3,750,925, Cl. 227-18.000.

Schmidt, Gerald Frederick: *See*—
Morley, Edwin Richard; and Schmidt, Gerald Frederick, 3,751,695.

Schmidt, Gerald W.: *See*—
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Schmidt, Herman W., Jr.: *See*—
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Schmidt, Peter J.: *See*—
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Schmidt, Volker E.: *See*—
Schmidt, Erich A.; and Schmidt, Volker E., 3,750,925.

Schmidt, Wolfgang, to Emuge-Werk Richard Glimpel Fabri, fur Prazisionsweikzeuge vorm Maschkau & Glimpel. Quick-change chuck with longitudinal compensation for thread-cutting tools. 3,751,051, Cl. 279-16.000.

Schmit, George N.: *See*—
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Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dietrich, to Espe Fabrik Pharmazeutischer Praparate GmbH. Casting materials for dental purposes containing a bis-ethylene-imene compound capable of being crosslinked. 3,751,395, Cl. 260-37.0n.

Schmitz, Jean; Hunziker, Fritz; and Kunzle, Franz Martin, to Sandoz-Wander, Inc. 2-Nitro-11-(1-piperazinyl)-dibenz (b,f) (1,4) oxazepines. 3,751,415, Cl. 260-268.0tr.

Schneider, Gerd; and Mammann, Joachim-Friedrich, to Siemens Aktiengesellschaft. Device for forming workpieces by means of underwater spark discharges. 3,750,441, Cl. 72-56.000.

Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft: *See*—
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Schoen, Walter F., to Atlantic Richfield Company. Gasoline composition. 3,751,235, Cl. 44-58.000.

Schofer, Rudolf: *See*—
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Scholler, Ami: *See*—
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Schoning, Josef: *See*—
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School, Hermann; Mauch, Harald; Glockler, Otto; Rittmannsberger, Norbert; Reichardt, Wolfgang; Werner, Peter; and Drews, Ulrich, to Bosch, Robert G.m.b.H. Fuel injection system controlled by the amount of air drawn in during the suction stroke. 3,750,631, I. 123-32.0ea.

Schossler, Werner; and Heinemann, Otto, to Polysius AG. Rotary kiln precooler construction. 3,751,217, Cl. 432-80.000.

Schragle, Walter: *See*—
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Schraven, Eckhard: *See*—
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Schreiber, Anthony J., to Standard Oil Company. Extrusion die with channeled die endplates. 3,751,209, Cl. 425-461.000.

Schreuder, Thomas R., to Swift & Company. Poultry processing improvement. 3,750,231, Cl. 17-11.000.

Schroeder, Clarence J. Mixer attachment for ice cream freezer. 3,751,013, Cl. 259-185.000.

Schroeder, John F., to United States Gypsum Company. Fire resistant asphalt roofing. 3,751,291, Cl. 117-126.00r.

Schultz, Fred R., to Aluminum Company of America. Rivet fabrication. 3,750,606, Cl. 113-1.00f.

Schulz, Hans-Dieter, to Espera-Werke Aktiengesellschaft. Label transporting device for a price calculating scale. 3,751,322, Cl. 156-360.000.

Schumacher, Egon. Atering valve for small animals, especially chickens, preferably with drip pan. 3,750,628, Cl. 119-72.500.

Schumacher, Ingatius: *See—*
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Schuman, Le Roy J.: *See—*
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Schweng, Otto; Smejkal, Hellmuth; Vereb, Hans; and Eicher, Karl, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Nozzle-head for a water-cooled blowing lance. 3,750,952, Cl. 239-132.300.
Schwenk, Bernd: *See—*
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Schwerdtel, Wolf; Swodenk, Wolfgang; and Woernle, Peter, to Bayer Aktiengesellschaft. Process for the production of cyclopentene from cyclopentadiene. 3,751,497, Cl. 260-666.00a.
Scotto, Victor Edward; and Blackwelder, Maurice W., to Owens-Illinois, Inc. Process for controlling dimensions of the product in formed plastic extrusion. 3,751,537, Cl. 264-40.000.
Scovill Manufacturing Company: *See—*
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Se-Kit, Yuen. Combined mixer and pourer. 3,750,910, Cl. 222-239.000.
Sea Savory, Inc.: *See—*
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Seager, Brent H. A.; and Williams, Geoffrey A., to Dunlop Limited. Temperature control systems. 3,751,631, Cl. 219-485.000.
Searle, G. D., & Company: *See—*
Lenz, George R.; and Pappo, Raphael, 3,751,438.
Searle, John L.; and Hampton, Donald B., to Raytheon Company. Card reader system. 3,751,639, Cl. 236-61.11e.
S.E.B.A.C. S.p.A.: *See—*
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Sedgewick, Richard D. Method and apparatus for winding and inserting stator coils. 3,750,718, Cl. 140-92.100.
Seemann, Fritz; and Troxler, Franz, to Sandoz, Ltd. 4-(3-Amino-2-substituted propoxy)indole derivatives. 3,751,429, Cl. 260-326.14r.
Seiden, Paul, to Procter & Gamble Company, The. Shortening for highly aerated creamy frostings. 3,751,265, Cl. 99-139.000.
Seifert, Thomas G. Method of utilizing standardized punch cards as punch coded and visually marked playing cards. 3,751,041, Cl. 273-149.00p.
Seitz, Fred H.: *See—*
Miller, Matthew N.; and Seitz, Fred H., 3,751,101.
Seitz, Lamont J.; and Miranda, Eduardo V., to Baxter Laboratories, Inc. Viewing rack. 3,751,172, Cl. 356-244.000.
Seitz, Lamont J.; and Bruen, Robert W., to Baxter Laboratories, Inc. Receptacle having a distendable sidewall. 3,751,341, Cl. 195-139.000.
Selfe, Albert E. J.: *See—*
Shelbourne, Hugh C.; and Selfe, Albert E. J., 3,750,765.
Semenov, Vladimir Petrovich. Apparatus for reforming hydrocarbons under pressure. 3,751,228, Cl. 23-289.000.
Senderoff, Seymour, to Union Carbide Corporation. Thermal, rechargeable electrochemical cell having lithium monoaluminide electrode and lithium tetrachloroaluminate electrolyte. 3,751,298, Cl. 137-6.00f.
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Sevcon Engineering Limited: *See—*
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Severinghaus, John W., to University of California, The Regents of the. Pulmonary impedance bridge. 3,750,649, Cl. 128-2.10z.
Severson, Asbjorn M.: *See—*
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Seyferth, Dietmar, to PPG Industries, Inc. Prevention of discoloration in vinylidene chloride. 3,751,495, Cl. 260-654.00s.
Seymour, David J.; and Martin, David. Shallow-draft boat. 3,750,607, Cl. 114-65.00n.
Sharp, Herbert John; and Norrish, Margaret Evelyn, to GKN Sankey Limited. Manufacture of articles. 3,750,450, Cl. 72-353.000.
Sharpe, Thomas H. Self-starting air flow inducing reaction motor. 3,750,400, Cl. 60-269.000.
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Shaw, Lawrence M., to Lyon-Shaw, Incorporated. Strap fastening arrangement. 3,751,110, Cl. 297-452.000.
Shelbourne, Hugh C.; and Selfe, Albert E. J., to Morrison & Morrison Limited. Reducing of noise from piling rigs and the like. 3,750,765, Cl. 173-46.000.
Shell Oil Company: *See—*
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Sherwin, John M. Knee retractor. 3,750,652, Cl. 128-17.000.
Sherwood, John R., to AMF Incorporated. Telegraph relay. 3,751,686, Cl. 307-241.000.
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Shimizu, Soichiro. Joint for under-water structures. 3,750,411, Cl. 61-43.000.
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Shiu, Desmond K. Physiotherapeutic devices and methods. 3,750,654, Cl. 128-57.000.
Shockley, Phillip B. Dual action gardening implement. 3,750,760, Cl. 172-374.000.
Shoe, Theodore W.; and Smith, Robert E., to Flexicore Co., Inc., The. Composite form with liner plates. 3,750,998, Cl. 249-50.000.
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Shoemaker, Leon H., to National Mine Service Company. Dual braking system for a mining locomotive. 3,750,852, Cl. 188-107.000.
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Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.
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Sidler, Werner, to Schweizerische Aluminum AG, Corporation. Method for the unpacking of cylindrical bodies interconnected groupwise by bands, and device for the performance thereof. 3,750,504, Cl. 83-16.000.
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Simmons, Bjorn Herman Olof, to Aktiebolaget Bofors. Projectile carried ignitable device having delayed, large surface ignition. 3,750,577, Cl. 102-37.600.

Simon, Norman, to Mount Sinai School of Medicine of the City and University of New York. Irradiators for treating the body. 3,750,653, Cl. 128-1.200.

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Sleishman, Donald Eric. Drum pedal device. 3,750,517, Cl. 84-422.000.

Sloughfy, James L.; and Fegan, Lloyd V., Jr., to Bethlehem Steel Corporation. Method for producing weather-resistant superfluxed metallized pellets from iron-bearing fines and a superfluxed metallized pellet produced thereby. 3,751,241, Cl. 75-3.000.

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Sluis, Pieter A. Article orienting machine. 3,750,800, Cl. 198-33.0aa.

Small, James E.; and Jeffries, Sampson F., to Don Chemical Company, The. Tablet coating process and composition. 3,751,277, Cl. 106-213.000.

Small, Richard B., to Texas Instruments, Incorporated. Method of mounting electronic devices. 3,750,269, Cl. 29-580.000.

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Smith, Dennis Clifford, to National Research Development Corporation. Zinc oxide-poly(acrylic acid) surgical cements. 3,751,391, Cl. 260-29.60m.

Smith, Drexel Kermit, to Du Pont de Nemours, E. I., and Company. Jet device. 3,750,302, Cl. 34-154.000.

Smith, Gale E.; and Hartman, Paul, to Eastman Kodak Company. Photothermographic element and process. 3,751,252, Cl. 96-63.000.

Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence Temple, to California R & D Center. Manipolative toy. 3,750,330, Cl. 46-119.000.

Smith, Lester E.; and Lin, Chao H., to Olin Corporation. Band spring clutch. 3,750,785, Cl. 192-81.00c.

Smith, Robert E.: *See—*
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Smith, Robert Stacy, Jr., to Dow Chemical Company, The. Method for producing arched structures. 3,750,353, Cl. 52-745.000.

Smith, Roger M.; and Watts, Loyal O., to Caterpillar Tractor Company. Ripper with top-mounted extendible tip. 3,750,761, Cl. 172-719.000.

Smith, Rolo Wayne, to Rieke Corporation. Helical path conveyor. 3,750,859, Cl. 198-136.000.

Smith, Terence Princep, to Teledictor Limited. Feed control installations for herds of animals. 3,750,626, Cl. 119-51.00r.

Smith, William R., to Textron, Inc. Turret Lathe. 3,750,244, Cl. 29-27.00r.

Smiths Industries, Limited: *See—*
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Smorenburg, Johannes Jacobus, to Stork Amsterdam N.V. Method for cutting through a block of plastic material. 3,751,544, Cl. 264-157.000.

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Snow, Roland B., to United States Steel Corporation. Heat-treating-furnace roll and method of heat-treating metal strip therewith. 3,751,195, Cl. 432-8.000.

Sobel, Jay E., to Universal Oil Products Company. Hydrogen fluoride purification. 3,751,489, Cl. 260-683.480.

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Societa' Applicazioni Homma Antivibranti Saga S.p.A.: *See—*
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Societe Anonyme, Richier: *See—*
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Societe d'Etudes de Machines Thermiques Saint-Denis: *See—*
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Societe d'Etudes de Produits Chimiques: *See—*
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Societe d'Optique Precision, Electronique et Mecanique- Sopelem: *See—*
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Societe Financiere Francaise de Licences et Brevets: *See—*
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Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
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Societe Hamon Sobelco S.A.: *See—*
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Societe Industrielle d'Electronique et d'Informatique: *See—*
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Societe Industrielle Honeywell Bull (Societe Anonyne): *See—*
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Societe Italiana Resine S.p.A.: *See—*
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Soderman, Richard J.: *See—*
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Soderstrom, Lars. Grinding machine. 3,750,342, Cl. 51-34.00r.

Soffer, Jacques; and Tonnerieux, Francois, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Antiskid apparatus. 3,751,117, Cl. 303-21.0cb.

Solem, Richard H.; and Berg, Lawrence D., to Dow Chemical Company, The. 2,2-Dibromo-2-cyanoacetamide. 3,751,444, Cl. 260-465.400.

Somerville, Kenneth E. Connectornd modules for structural assemblies. 3,751,082, Cl. 287-54.00a.

Sonin, Ain A.; Probstein, Ronald F.; and Shwartz, Josef, to Avco Corporation. Continuous fluid-solid contact process. 3,751,362, Cl. 210-33.000.

Sonoco Products Company: *See—*
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Sourbet, Claude Pierre; and Devylder, Rene Simon. Pilfer-proof closure. 3,750,821, Cl. 215-42.000.

Southwest Research Institute: *See—*
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Souza, George; and Pool, Clyde D., to Gain Manufacturing Corporation. Article dispensing mechanism for a vending machine. 3,750,831, Cl. 221-188.000.

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Spietschka, Ernst: *See—*
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Spivack, John D., to Ciba-Geigy Corporation. Metal complexes of N,N-dialkyl esters of ethylene nitrotetracetic acid and compositions stabilized thereby. 3,751,440, Cl. 260-439.00r.

Spivey, Joseph W., to Mercy-Lift, Inc., mesne. Invalid lift apparatus. 3,750,199, Cl. 5-63.000.

Spoerke, Roger W., to Goodyear Tire & Rubber Company, The. Dehydrogenation of olefins. 3,751,510, Cl. 260-680.00r.

Sprague Electric Company: *See—*

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Walters, Gordon E., 3,750,973.
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Hauck, Frederic P.; Sundeen, Joseph E.; and Reid, Joyce A., 3,751,420.
St. Cyr, Lewis A.; and Young, Loren H., to Vulcan Materials Company. Prevention of air pollution by using solid adsorbents to remove particulates of less than 0.5 microns in size from flue gases. 3,750,372, Cl. 55-71.000.
Staat, Aaron A.; and Staat, Robert A. Mixing valve structure. 3,750,708, Cl. 137-625.170.
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Stachel, Adolf; deceased (by Stachel, Ingeburg Lydia Katharina; heiress); Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard. 3-(Alpha-substituted amino-beta-alkoxybenzoxy-propyl)-6,7- or 6,7,8-alkoxy-1,2,3- benzotriazine-4(3H)-ones. 3751,413, Cl. 260-248.0as.
Stachel, Ingeburg Lydia Katharina: *See—*
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Standard Packaging Corporation: *See—*
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Stanley Works, The: *See—*
Burrows, Milford D.; and Morganson, Peter H., 3,750,483.
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Stark, Herbert Carl: *See—*
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Stark, Joseph L., to Chippewa Lumber Industries, Inc. Installation of wood millwork with pre-applied adhesive. 3,750,728, Cl. 144-315.000.
Starkey, George W.; Sitton, Robert L.; Duke, Jimmy R.; and Miller, Walter E., Jr., to United States of America, Army. Command guidance transmitter system. 3,751,166, Cl. 356-5.000.
Starrett, James R., to Bauer Brothers Company, The. Rotary valve improvements. 3,750,902, Cl. 214-17.0cc.
Stavrou, Steven. Trimmer capaçitor. 3,751,725, Cl. 317-249.00r.
Steele, John D., to Eastman Kodak Company. Fluid containers having both relatively strong and relatively weak seals. 3,750,907, Cl. 222-107.000.
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Steigerwald, Conrad J., to Honeywell Information Systems Inc. Wire-twisting apparatus. 3,750,720, Cl. 140-149.000.
Stengle, Roland, to Krauss u. Reichert Spezialmaschinenfabrik. Cloth laying machine. 3,750,290, Cl. 33-1.00r.
Steube, Kenneth E.: *See—*
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Stevens, Charles R. Machine and method for wrapping three dimensional rectangular objects. 3,750,361, Cl. 53-32.000.
Stevenson, William J. Motorized sled type vehicle. 3,750,776, Cl. 180-6.00r.
Stewart, George W.: *See—*
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Stimberg, Hans-Josef; Galinke, Joachim; and Schmadel, Edmund, to Henkel & Cie GmbH. Low-foaming rinsing washing and cleaning compositions. 3,751,370, Cl. 252-102.000.
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Stoneburner, Jerry L. Ingot carrying trailer. 3,751,102, Cl. 296-3.000.
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Stranicky, Fedor. Flexible respirator with inflatable frame. 3,750,665, Cl. 128-146.600.
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Stringer, Myron Scott; Smith, Daniel W.; Mac Ivergan, Robert G.; and Eldenbaum, Robert W., to Kellwood Company. Folding apparatus. 3,750,916, Cl. 223-37.000.
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Strother, John. Telephone alarm. 3,751,594, Cl. 179-5.00p.
Struger, Odo J., to Allen-Bradley Company. Fault mode detection system. 3,751,684, Cl. 307-202.000.
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Styner, Rudolf, to Strapex AG. Seal for closing ends of strips or ribbons. 3,750,239, Cl. 24-23.00w.
Subterranean Tools Inc.: *See—*
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Suckow, Theodore K. Trailer hitch having a stabilizing mechanism. 3,751,069, Cl. 280-406.00a.
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Sumitomo Chemical Company, Limited: *See—*
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Suzuki, Hiroshige; Einaga, Hisahiko; and Mori, Yasumichi, to National Institute for Researches in Inorganic Materials. Solvent extraction process for purification of beryllium. 3,751,557, Cl. 423-112.000.

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Suzuki, Takeo; and Honda, Haruo, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing chloramphenicol analogue. 3,751,339, Cl. 195-96.000.

Suzuki, Toshi: *See*—
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Swallow, Robert E.; Bymoen, Darrell A.; and West, Gaylon L., to United States of America, Navy. Firing device. 3,750,586, Cl. 102-16.000.

Swan, David W., to Minnesota Mining and Manufacturing Company. Photoconductive compositions containing ferrocene-containing aldehyde polymers. 3,751,247, Cl. 96-1.500.

Swanson, Linwood B., to Cushman Industries, Incorporated. Chuck with centering and compensating jaws. 3,751,053, Cl. 279-119.000.

Swart, Louis Maarten: *See*—
Weijland, Willem Paul; Gerlach, Hans Georg; van den Beld, Antonius Joannes Maria; and Swart, Louis Maarten, 3,751,703.

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Swift, Walter D. Portable power saw apparatus. 3,750,284, Cl. 30-380.000.

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Sysoeva, Ljudmila Petrovna: *See*—
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Szilagy, Paul J., to Enthone, Incorporated. Alkaline bright zinc electroplating. 3,751,348, Cl. 204-55.00y.

Szostak, Roland; and Krueger, Wilm, to Agfa-Gevaert Aktiengesellschaft. Electrostatic copying apparatus with means for preventing contamination of transfer material. 3,751,156, Cl. 355-3.000.

Szura, Adam, Jr.: *See*—
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Tabana, Minoru; Okumura, Takuzo; and Yasuno, Kiyoshi, to Sumitomo Chemical Company, Limited. Modified polyphenylene oxide composition containing a fatty acid bisamide either alone or in admixture with a metal salt of a fatty acid. 3,751,388, Cl. 260-23.00s

Taguchi, Seiichi; Tezuka, Sigeru; Tomotsu, Takeshi; and Mizuki, Eiichi, to Fuji Photo Film Co., Ltd. Dye tranfer apparatus with stain preventing device. 3,750,567, Cl. 101-181.000.

Takabe, Reiho: *See*—
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Takahashi, Yasunobu; Fukuoka, Yohei; Sasaki, Katuyoshi; and Senoo, Saburo, to Asahi Kasei Kogyo Kabushiki Kaisha. Preparations of N, N-dialkyl-substituted fatty amides from nitriles and alcohols and N, N-dialkylformamides from hydrogen cyanide and alcohols 3,751,465, Cl. 260-561.00r.

Takahashi, Yoichi: *See*—
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Takami, Hisao: *See*—
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Inamoto, Yoshiaki; Nakayama, Horokazu; and Takenaka, Hidetsugu, 3,751,455.

Takeya, Yasumitsu; and Tsunakawa, Nobutaka, to Daiichi Seiyaku Co., Ltd. Method and apparatus for electroextraction. 3,751,356, Cl. 204-299.000.

Tamper Inc.: *See*—
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Tamuki, Minoru: *See*—
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Tanaka, Katsunobu; Kimura, Kazuo; and Yamamoto, Masaki, to Kyowa Hakko Kogyo Co., Ltd. Process for producing cells of microorganisms. 3,751,337, Cl. 195-28.00r.

Tanaka, Matsuo, to Nippon Denon Co., Ltd. Transistorized ignition device of an internal combustion engine. 3,750,638, Cl. 123-148.00e.

Tanaka, Minoru: *See*—
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Tanaka, Mitsuaki: *See*—
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Tanaka, Norihito, to Lihit Industrial Co., Ltd. Manually operated paper punching device. 3,750,514, Cl. 83-454.000.

Tanara, Giovanni, to Foodice Engineering Italiana S.p.A. Cake icing machine. 3,751,198, Cl. 425-100.000.

Tanikoshi, Kinzi: *See*—
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Tanimura, Hiroshi: *See*—
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Tappan Company, The: *See*—
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Tapper, Donald N.; and Fieglein, James M., to Westinghouse Electric Corporation. Overspeed protection system for a turbo-generator unit. 3,750,395, Cl. 60-73.000.

Tatara, Seizo. Vitamin B_{12}-enriched foods transformed from seed germs and endocermis. 3,751,261, Cl. 99-11.000.

Tayama, Eisei. Container for marine transportation of a large-sized, massive cargo. 3,750,599, Cl. 108-161.000.

Taylor, Marvin A.; Johnson, Glenn H.; and Becker, H. Jack, 1/3 each to Taylor, said Johnson, and said Becker. Variable density contour chair. 3,751,111, Cl. 297-456.000.

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Taylor, Willis H., III, to United States of America, Army. Method and apparatus for extracting lodged projectiles. 3,750,262, Cl. 29-427.000.

Tazuma, James J.; and Kothart, Vipin M., to Goodyear Tire & Rubber Company, The. Hydrogenation process. 3,751,499, Cl. 260-666.00a.

Tazuma, James J., to Goodyear Tire & Rubber Company, The. Skeletal rearrangement of olefins. 3,751,513, Cl. 260-683.200.

Technibilt Corporation: *See*—
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Techno-Components Corporation: *See*—
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Telebeam Corporation: *See*—
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Telecommunication Technology, Inc.: *See*—
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Therma-Ray, Inc.: *See—*
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Theuerer, Henry C.; and Turner, Paul A., to Bell Telephone Laboratories, Incorporated. Method for reducing interdiffusion rates between thin film components. 3,751,293, Cl. 117-217.000.
Thevenaz, Louis, to Bolex International S.A. Cinematographic projector. 3,751,148, Cl. 352-123.000.
Thoma, Oswald H., to Hydraulic-Drive A.G. Hydraulic pumps or motors. 3,750,533, Cl. 91-498.000.
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Thomas, John Henry. Suspension devices. 3,751,023, Cl. 267-64.000.
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Thompson, Gene D.; and Carlton, Louis A., to Esso Production Research Company. Controlling subsurface pressures while drilling with oil base muds. 3,750,766, Cl. 175-50.000.
Thompson, Norman D.: *See—*
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Thompson, Quenten E. Movement control for pickup-mounted vehicle. 3,751,104, Cl. 296-23.0mc.
Thompson, Richard G. Propulsion unit for skier. 3,750,777, Cl. 180-6.00r.
Thompson, Richard J.: *See—*
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Throberg, Kaj Stellan, to Sobrefina S.A. Collective package for packaging containers. 3,750,876, Cl. 206-65.00s.
Thurber, Gerald A.: *See—*
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Thurston, Warren M., to Atomic Energy of Canada Limited. Sample vaporizing apparatus. 3,651,660, Cl. 250-288.000.
Thybault, Neil H., 1/2 to Nicholas, Chris. Fly catching attachment for vacuum cleaner. 3,750,327, Cl. 43-139.000.
Tibbs, Eugene E. Chest drainage system. 3,750,692, Cl. 137-205.000.
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Tischler, Edward J., to Ecodyne Corporation. Salt indicator in a water conditioning device. 3,751,233, Cl. 23-272.000.
Titov, Dmitry Vladimirovich. Beating up device for travelling wave looms. 3,750,713, Cl. 139-12.000.
T.M.N. (Research) Limited: *See—*
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Tobias, Michael A., to Mobil Oil Corporation. Preparation of 1,2-cyclohexanedione. 3,751,478, Cl. 260-586.00r.
Todd, David A.; and Fitzgerald, Barry Joseph. Quantity and price computer system. 3,751,642, Cl. 235-151.340.
Todo, Naoyuki; Hagiwara, Hiroyuki; Kurita, Minoru; and Sato, Toshio, to Industrial Science & Technology, Agency of. Process for preparing dichlorobutene. 3,751,496, Cl. 260-654.00a.
Toensing, James W., to Minnesota Mining and Manufacturing Company. Tape severing device. 3,750,511, Cl. 83-337.000.
Toft, Luke Alexander, to International Nickel Company, Inc., The. Pressure kiln seal. 3,751,199, Cl. 432-115.000.
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Toyohama, Yukio; and Kobari, Kiyoshi, to Fuji Denki Seizo Kabushiki Kaisha. Device and method for stopping a power driven unit at a predetermined position. 3,750,786, Cl. 192-146.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Valentine, Lamar T. Vacuum seal for internal pipeline line-up clamp. 3,750,928, Cl. 228-44.000.
Valentine, Louis A., to Valentine, Henry L. Pneumatic suspension for a snowmobile. 3,750,775, Cl. 180-5.00r.
Van Delden, Ronald: *See—*
Reed, Jerry A.; Van Delden, Ronald; Maruko, Shuji U.; Garner, George E.; Ryan, Stanley; Waring, Winfred F.; Klein, Jacob; Schmidt, Herman W., Jr.; and Friedrich, Simon, 3,750,529.
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Van Der Ven, Servaas; and Binsergen, Frederik L., to Shell Oil Company. Process for recovery of pivalolactone from polymers thereof. 3,751,435, Cl. 260-343.900.
Van Der Viliet, Cornelis: *See—*
Cramer, Rudolph E.; Van Der Viliet, Cornelis; and Ouwerkerk, Johannes H. W., 3,750,629.
van der Voori, Henricus G. P.; and DeJong, Willem P., to Shell Oil Company. Process. 3,751,475, Cl. 260-583.00p.
Van Horn, Joseph M.: *See—*
Wernikoff, Robert E.; Van Horn, Joseph M.; and Mignone, Albert E., 3,751,582.
Van Patten, Eric M.; and Freck, James A., to American Maize-Products Company. Method of coating food products with ungelatinized unmodified high amylose starch prior to deep fat frying. 3,751,268, Cl. 99-100.000.
Van Sorge, Bernardus J., to General Electric Company. Alkylation process. 3,751,488, Cl. 260-621.00r.
Vance, William R., to Rusco Industries, Inc. Insulated prime door. 3,750,333, Cl. 49-501.000.
Vander Meer, Clayton H.: *See—*
Daigle, Jack R.; Haregger, James D.; Zollinger, Howard A.; and Vander Meer, Clayton H., 3,751,640.
Vander Wall, Eugene M.; and Lucas, James M., to Aerojet-General Corporation. Gelation of hydrazine and hydrazine-type rocket fuels. 3,751,311, Cl. 149-36.000.
Vanlanduyt, Dennis C., to United States of America, Army. Preparation of ferrocenylbutadienes. 3,751,441, Cl. 260-439.0cy.
Varian Associates: *See—*
Johnson, Floyd O., 3,751,157.
Vaughan, Curtis M. Agitator for a therapy bath. 3,750,656, Cl. 128-66.000.
Vdoviak, John W.; Belk, Samuel A.; and Weinstein, Barry, to General Electric Company. Mixed flow augmentation system. 3,750,402, Cl. 60-261.000.
Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Austustungen: *See—*
Johne, Hans; and Graupner, Eberhard, 3,750,570.
VEB Werkzeugmaschinenkombinat "Fritz Heckert" Karl-Marx-Stadt: *See—*
Nordmann, Edwin; and Erler, Gerhard, 3,750,295.
Veenendaal & Co. Industriestrasse: *See—*
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Velie, Wallace W.: *See—*
Babington, Robert S.; and Velie, Wallace W., 3,751,210.
Venegas, Juan Quintero: *See—*
Le Paliscot, Christian; and Venegas, Juan Quintero, 3,750,280.
Venter, Pieter Lawrence, to Paddy McDonnell (Proprietary) Limited. Rotary cutters. 3,750,772, Cl. 175-364.000.
Verbel, Robert: *See—*
Miller, Arthur D.; and Verbel, Robert, 3,750,384.
Vereb, Hans: *See—*
Schweng, Otto; Smejkal, Hellmuth; Vereb, Hans; and Eicher, Karl, 3,750,952.
Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*

Schweng, Otto; Smejkal, Hellmuth; Vereb, Hans; and Eicher, Karl, 3,750,952.

Verheij, Arend. Line float having line clamping means actuable by a pull on the line. 3,750,324, Cl. 43-44.880.

Verhulst, Antonius Gerardus Hendrikus; Holtwijk, Theodoor; Lems, Willem; and Enz, Ulrich Ernst, to U.S. Philips Corporation. Magnetisable material for detecting and/or recording electromagnetic radiation and electrons. 3,751,663, Cl. 250-472.000.

Verleur, Hans Willem: *See—*
Derick, Lincoln; Jordan, Andrew Stephen; and Verleur, Hans Willem, 3,751,309.

Verlinde, Auguste; and Dorot, Henri, to Verlinde S.A. Servo-control device for varying the delivery and direction of distribution of a variable delivery pump. 3,750,406, Cl. 60-442.000.

Verlinde S.A.: *See—*
Verlinde, Auguste; and Dorot, Henri, 3,750,406.

Vesely, Miloslav; Bohac, Zdenek; and Vondrak, Frantisek, to Vyzkumny ustav organickysk syntez. Through-flow polarographic analyzer having constant flow facilities. 3,750,460, Cl. 73-61.10r.

Via, Carlo, to Societa' Applicazioni Homma Antivibranti Saga S.p.A. Flexible torque transmission couplings. 3,750,422, Cl. 64-11.00r.

Viatron Computer Systems Corporation: *See—*
Bracci, George T., 3,751,043.

Victor Company of Japan Ltd.: *See—*
Ogawa, Hiroshi; Suzuki, Toshi; Suzuki, Tadashi; and Tanaka, Mitsuaki, 3,751,599.
Yamamura, Takashi, 3,750,619.

Vidal Sario, Javier, to Perfil En Frio, S.A. Method for the manufacture of thermally insulated sandwich type building. 3,751,315, Cl. 156-71.000.

Vigneri, Ronald J.: *See—*
Insler, Julius R.; Leslie, Allen R.; and Vigneri, Ronald J., 3,751,587.

Villani, Lydia. Panty hose hanger. 3,750,917, Cl. 223-74.000.

Virtue, Eugene P.: *See—*
Lech, Richard J.; Ziskal, Joseph F.; Jennings, Marvin D.; Orth, Harold R.; and Virtue, Eugene P., 3,750,405.

Viste, Kenneth L.: *See—*
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Vock, Manfred H.: *See—*
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Vockenhuber, Karl: *See—*
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Vogeleer, John P., to Westinghouse Electric Corporation. Power hammer with reaction force absorbing means. 3,750,764, Cl. 173-43.000.

Von Berckheim, Constantin Graf. Arrangement for forming an electrostatic field in the region of a bed. 3,750,672, Cl. 128-326.000.

Von Hollen, John, to Von Hollen Tool Company, Inc. Composite bit. 3,751,176, Cl. 408-144.000.

Von Hollen Tool Company, Inc.: *See—*
Von Hollen, John, 3,751,176.

Von Meyer, William C.: *See—*
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Vondrak, Frantisek: *See—*
Vesely, Miloslav; Bohac, Zdenek; and Vondrak, Frantisek, 3,750,460.

Voyentzie, Peter R.; Ziemba, Richard T.; and Sugalski, Raymond K., to General Electric Company. Readily manufacturable thermal cell unit for explosive projectiles. 3,750,584, Cl. 102-70.20r.

Vulcan Materials Company: *See—*
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Vyzkumny ustav organickysk syntez: *See—*
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Waaske, Heinz, to Roller-Werke Franke & Heidecke. Photographic roll film camera with a movable lens tube. 3,750,549, Cl. 95-11.00r.

Wacker, Wade L.: *See—*
Eaton, Douglas G.; Wacker, Wade L.; and Appleman, Theodore C., 3,750,282.

Wackerele, Peter Martin, to Messerschmitt-Bolkow Blohm GmbH. Method and apparatus for a continuous fluid treatment of fibrous materials. 3,751,224, Cl. 8-151.000.

Wada, George: *See—*
Gralenski, Nicholas M.; and Wada, George, 3,751,701.

Wade, R. M., & Company: *See—*
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Wahle, Gunter: *See—*
Kruse, Friedel; Wahle, Gunter; Erdmann, Otto; and Rudszinat, Willy, 3,750,676.

Wakabayashi, Hideo. Coffee making bottle and method for making same. 3,750,559, Cl. 99-279.000.

Wakao, Mitsuro: *See—*
Murato, Kenichi; Maruyama, Yasuo; Wakao, Mitsuro; Takahashi, Shogo; and Takami, Hisao, 3,750,897.

Wake, Herbert D., to Essco, Inc. Oscillating doctor-blade mechanism. 3,750,228, Cl. 15-256.530.

Wakefield, Lynn B.: *See—*
Kay, Edward L.; Roberts, Durward T., Jr.; Calihan, Lawrence E.; and Wakefield, Lynn B., 3,751,511.

Walchle, David L.; and Schmidt, Peter J., to Xomox Corporation. Coated valving member. 3,750,698, Cl. 137-375.000.

Walde, Erik B., to Forenade Fabriksverken. Projectile having changeable outer form. 3,750,587, Cl. 102-67.000.

Walk-In-Boys, Inc., The: *See—*
Carey, William H., 3,751,040.

Walker, Alan J. Electric motors. 3,751,698, Cl. 310-126.000.

Walker, Ferman L., to Collins Radio Company. Means for determining heading alignment in an inertial navigation system. 3,750,456, Cl. 73-1.00e.

Walker, Robert Winn, to Rohm & Haas Company. Adsorption process. 3,751,507, Cl. 260-674.0sa.

Wallace, Harry L., to Burroughs Corporation. Constant force spring carrier return mechanism. 3,750,795, Cl. 197-68.000.

Wallace, William D.: *See—*
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Wallberg, Erik Arne, to Industrilaboratoriet Aktienbolag. Method in the utilizing of tobacco waste. 3,750,679, Cl. 131-140.00c.

Wally, Harry W. Tape playback for playing through a radio receiver. 3,751,601, Cl. 179-100.110.

Walpole, Floyd N., to United States of America, Army. Rod alignment device for fluid power cylinders. 3,750,536, Cl. 92-165.000.

Walpole, Floyd N., to United States of America, Army. Rod alignment device for fluid power cylinders. 3,753,536, Cl. 92-165.000.

Walter, William R. Binary adjustment for water skis. 3,750,204, Cl. 9-310.0aa.

Walters, Gordon E., to Sprague Electric Company. Means and method of web slitting and winding. 3,750,973, Cl. 242-56.200.

Walther Buromaschinen, GmbH: *See—*
Weskamp, Gerhard, 3,750,944.

Walthier, Thomas N.; Rosefelder, Andre Marcel; and Schatz, Clifford E., to Bear Creek Mining Company. Free fall bottom sampler. 3,750,547, Cl. 95-11.000.

Walton, George W. Ashtray. 3,750,824, Cl. 220-20.500.

Wandel u Goltermann: *See—*
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Wang, Raymond C., to Motorola, Inc. Poly-silicon electrodes for C-IG-FETS. 3,750,268, Cl. 29-571.000.

Wanner, Louis R.: *See—*
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Warburton, Geoffrey; and Whetter, Ernest Robert, to Textron Limited, mesne. Sliding clasp fasteners. 3,750,605, Cl. 112-265.000.

Ward, Gary B.: *See—*
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Waring, Winfred F.: *See—*
Reed, Jerry A.; Van Delden, Ronald; Maruko, Shuji U.; Garner, George E.; Ryan, Stanley; Waring, Winfred F.; Klein, Jacob; Schmidt, Herman W., Jr.; and Friedrich, Simon, 3,750,529.

Warner-Lambert Company: *See—*
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Warr, Joseph P. Track for toy autos. 3,750,945, Cl. 238-10.00e.

Warren Automatic Tool Company: *See—*
Dower, Ethell J., 3,750,480.

Warren, David: *See—*
Austin, Christopher Frederic; Crowther, Philip Simpson; Warren, David; and Howitt, David, 3,750,425.

Warren Pumps, Inc.: *See—*
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Washchynsky, Bohdan: *See—*
Etchell, Gordon; and Washchynsky, Bohdan, 3,750,572.

Wasinger, Fidelis J. Shearing apparatus. 3,750,515, Cl. 83-599.000.

Wassmann, William A., to Westinghouse Electric Corporation. Bi-directional centrifugal pump. 3,751,179, Cl. 415-152.00a.

Watanabe, Jun: *See—*
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Watanabe, Tsuyoshi: *See—*
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Waterloo, William C., to Graham Engineering Corporation. Apparatus for extruding synthetic plastic resins at low temperatures. 3,751,014, Cl. 259-191.000.

Waters, william E., to Textron, Inc. Collapsible threaded insert device. 3,750,525, Cl. 185-70.000.

Watkins, Gordon Leonard: *See—*
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Watkins-Johnson Company: *See—*
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Watson, Thomas Arthur Watts Knott. Traction devices. 3,750,778, Cl. 180-9.360.

Watson, William David: *See—*
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Watts, Loyal O.: *See—*
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Waumans, Benny Louisa Angelina: *See—*
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Wavre, Andre: *See—*
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Wazabayashi, Manzo; Kato, Toshio; Kawabe, Michio; Kawai, Nobumi; and Ishida, Minoru. Vehicle fender. 3,751,090, Cl. 293-38.000.

Weatherhead Company, The: *See—*
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Weaver, Preston R., to UMC Electronics Company. Fluid pressure monitoring system. 3,750,475, Cl. 73-398.0ar.

Weaver, William W.: *See—*
Holman, Harry A., Jr.; Kallmeyer, Albert W.; and Weaver, William W., 3,750,714.

Web Products, Inc.: *See—*
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Webb, William M., to General Electric Company. Refrigerator including automatic icemaker and water pump driven thereby. 3,750,420, Cl. 62-331.000.

Weber, Helmut: *See—*
Weyer, Rudi; Aumuller, Walter; Weber, Helmut; Schweitzer, Roland; and Heerdt, Ruth, 3,751,418.

Weck, Karl Gustav: *See—*
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Wehrenberg, Thomas M.: *See—*
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Wehrmeister, Herbert L.; and Hodge, Edward B., to Commercial Solvents Corporation. F.E.S. derivatives. 3,751,431, Cl. 260-343.20f.

Weijland, Willem Paul; Gerlach, Hans Georg; van den Beld, Antonius Joannes Maria; and Swart, Louis Maarten, to U.S. Philips Corporation. Vidicon having external light source adjacent sealed end, and light conductor transmitting light therefrom to target. 3751,703, Cl. 313-65.01f.

Weikert, Roy J. Valve and nozzle assembly. 3,750,959, Cl. 239-539.000.

Weimann, Gunter: *See—*
Bergmeyer, Hans Ulrich; Michael, Gerhard; Nelboeck-Hochstetter, Michael; Stork, Harald; and Weimann, Gunter, 3,751,408.

Weinberg, Kurt, to Union Carbide Corporation. Process for the production of tertiary phosphines. 3,751,481, Cl. 260-601.50p.

Weinberg, Kurt, to Union Carbide Corporation. Process for the production of tertiary phosphine oxides. 3,751,482, Cl. 260-606.50p.

Weingartner, Bernhard, to AKG Akustische u. Kino-Gerate Gesellschaft. Sound receiver head set or ear phone. 3,751,608, Cl. 179-182.00r.

Weinstein, Barry: *See—*
Vdoviak, John W.; Belk, Samuel A.; and Weinstein, Barry, 3,750,402.

Weinstein, Donald: *See—*
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Weinstock, Manuel: *See—*
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Weir, Donald H.; and Witte, Donald H., to Fox Pools, Inc. Swimming pool and deck. 3,750,197, Cl. 4-172.190.

Weis, Dan N. Fishing jig. 3,750,323, Cl. 43-42.280.

Weis, William B. Coil winding machine. 3,750,969, Cl. 242-1.10r.

Weisgerber, Willi, to Miller Printing Machinery Co. Register control apparatus for controlling both axial and circumferential register of a plate cylinder. 3,750,568, Cl. 101-248.000.

Weissman, Walter: *See—*
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Wej-It Expansion Products, Inc.: *See—*
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Wensell, Edward W.: *See—*
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Wenstrom, Richard T.: *See—*
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Wenzel, Klaus: *See—*
Donath, Hans; Beier, Hans Peter; Otto, Gottfried; Franke, Erich; Kornitzky, Gunter; Dietz, Eberhard; and Wenzel, Klaus, 3,750,826.

Wenzel, Werner; Franke, Friedrich H.; and Meraikib, Mohammed, to Reinische Braunkoklenwerke AG. Method of and apparatus for conveying granular masses in tubular treating chambers. 3,751,214, Cl. 432-15.000.

Werner Peddinghaus: *See—*
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Werner, Peter: *See—*
School, Hermann; Mauch, Harald; Glockler, Otto; Rittmannsberger, Norbert; Reichardt, Wolfgang; Werner, Peter; and Drews, Ulrich, 3,750,631.

Wernikoff, Robert E.; Van Horn, Joseph M.; and Mignone, Albert E.; deceased (by Mignone, Gilda), to Addressograph Multigraph Corporation. Stored program facsimile control system. 3,751,582, Cl. 178-6.000.

Wertz, Linda M.: *See—*
Bauerlein, Carl; Wertz, Linda M.; and Acuff, Kenneth L., 3,750,908.

Weskamp, Gerhard, to Walther Buromaschinen, GmbH. Zero stop device ten key calculating and adding machines. 3,750,944, Cl. 235-60.0tk.

West, Gaylon L.: *See—*
Swallow, Robert E.; Bymoen, Darrell A.; and West, Gaylon L., 3,750,586.

West, Norman: *See—*
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Western Electric Company, Incorporated: *See—*
Bohannon, William D., Jr., 3,750,830.
Dryden, Kerin Lee; and Ebrey, Roger George Anthony, 3,750,453.
Matthews, Arthur James, Jr.; and Terry, Raymond Otis, Jr., 3,750,341.

Westinghouse Air Brake Company: *See—*
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Westinghouse Electric Corporation: *See—*
Adelizzi, Richard S.; and Laurelli, James A., 3,750,398.
Berkovitz, Harry, 3,750,849.
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Westran Corporation: *See—*
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Weyer, Rudi; Aumuller, Walter; Weber, Helmut; Schweitzer, Roland; and Heerdt, Ruth, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzenesulfonyl-ureas and process for their manufacture. 3,751,418, Cl. 260-283.0sa.

Whalen, Gerald W.: *See—*
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Wheatley, Carl Franklin, Jr.: *See—*
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Wheeler, Edward L., to Uniroyal, Inc. 2,4,4-Tris-(alpha,alpha-dimethylbenzyl) diphenylamine. 3,751,472, Cl. 260-570.00r.

Whelan, Edmund Kerran, to National Dairy Association of New Zealand, Limited, The. Apparatus for supplying salt to curd in cheese manufacture. 3,750,286, Cl. 31-46.000.

Wheldon, Wilbert G., to Northrop Corporation. Side force control devices. 3,750,985, Cl. 244-83.00r.

Whetter, Ernest Robert: *See—*
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Whirlpool Corporation: *See—*
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White, Allen A., to Hesston Corporation. Loading conveyor for harvesters. 3,750,858, Cl. 198-115.000.

White, H. Thomas, Sr. Scooter skateboard. 3,751,062, Cl. 280-87.04a.

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White, Marvin H.; O'Sullivan, David D.; and Hamel, Richard G., to Westinghouse Electric Corporation. Electronic fuze system. 3,750,583, Cl. 102-70-20r.

Whitehead, Jack; Williams, Frank Ronald; and Gosden, Derek Vernon, to British Titan Limited. Beneficiation process for titaniferous ores. 3,751,556, Cl. 423-82.000.

Whitehurst, Gerald E.: *See—*
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Whitener, Robert V. Liquid sensing switch assembly. 3,750,950, Cl. 239-63.000.

Wick, Helmut, to Nordischer Maschinenbau Rud. Baader. Containers. 3,750,827, Cl. 220-74.000.

Wicki, Heinz, to Sandoz, Ltd. Hydroxymethylated polyazo dyes. 3,751,407, Cl. 260-169.000.

Wiedemann, Otto: *See—*
Putscher, Johann; Gersch, Josef; Wiedemann, Otto; and Winkler, Alfred, 3,750,542.

Wieneke, Franz. Roll condenser for producing a rolled strand of stalk and/or leaf material. 3,750,561, Cl. 100-89.000.

Wightman, Warren J. Connector for ski training. 3,751,056, Cl. 280-11.37e.

Wild, Heinz K., to TeWilo Industries, Inc. Solid-foods dispenser. 3,750,913, Cl. 222-387.000.

Wildi, Bernard S.; Westman, Thomas L.; and Keay, Leonard, to Monsanto Company. Stable polymer-enzyme oral hygiene compositions. 3,751,561, Cl. 424-48.000.

Wiley, Richard H., to Miles Laboratories, Inc. Citroylformic acid and its production. 3,751,458, Cl. 260-535.00p.

Wilhelm, Frederick C.: *See—*

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Wilhelm, George E.; Nagy, Stanley S.; and Hahn, Moon T., to Sperry Rand Corporation, mesne. Method of producing a magnetic storage medium. 3,751,345, Cl. 204-29.000.

Wilhelm, John Raymond. Fire escapes. 3,750,843, Cl. 182-72.000.

Wilkins, Malcolm: *See—*
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Willen, Charles, to Willen, Charles, & Cie. Tool holders for machine tools. 3,750,498, Cl. 82-36.00r.

Willen, Charles, & Cie: *See—*
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Williams, Frank Ronald: *See—*
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Williams, Galen. Swinging type trailer hitch. 3,751,072, Cl. 280-49.000.

Williams, Geoffrey A.: *See—*
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Williams, Jack C., to Texaco Inc. Method and system for transporting different types of fluid in a pipeline. 3,750,687, Cl. 137-1.000.

Williams, Leonard H. Sprinkler system and adapter valve therefor. 3,750,954, Cl. 239-178.000.

Williams, Nathan P.: *See—*
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Williams, Robert Carl, to Dresser Industries, Inc. Borehole shock absorber. 3,750,423, Cl. 64-23.000.

Williams, Robert G.; Howard Lawrence W.; Thompson, Richard J.; Prater, Johnny L.; and Ryder, Steven P., to United States of America, Army. Hydro-dynamic testing apparatus. 3,750,459, Cl. 73-49.400.

Williams, William D., to Aquology Systems, Inc. Apparatus for emptying sewage or waste facility of a boat. 3,751,187, Cl. 417-234.000.

Williamson, Herschel M.: *See—*
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Williamson, Kenneth D.: *See—*
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Willinger, Allan H.; and Kennedy, Melvin R., to Mattel, Inc. Valveless pump. 3,751,188, Cl. 417-240.000.

Wilson, Burton D.; Haist, Grant M.; and Olivares, Ismael A., to Eastman Kodak Company. Photosensitive and thermosensitive element, composition and process. 3,751,255, Cl. 96-66.00r.

Wilson, Herbert L.; Pommerrenig, Hans D.; and Gutierrez, William A., to United States of America, Army. Internal tube peltier cooling of image intensification photocathodes. 3,751,709, Cl. 315-50.000.

Wilson, John B.: *See—*
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Wilson, John Edwin. Base support assembly for vacuum vessels. 3,750,819, Cl. 215-13.00r.

Winkler, Alfred: *See—*
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Winkler, Charles L.; and Wavre, Andre, to Westinghouse Electric Corporation. Floor selector for an elevator car. 3,750,850, Cl. 187-29.00r.

Winters, Mary M. Aquatic apparatus with bouyancy control structure. 3,751,030, Cl. 272-1.00b.

Wintrell, Reginald, to Koppers Company, Inc. Hydraulic venturi. 3,750,375, Cl. 55-223.000.

Wise, Cecli S., to Fiber Controls Corporation. Textile processing equipment. 3,750,235, Cl. 19-105.000.

Wiseman, Robert E. Plastic closure for paper containers and method of making same. 3,750,938, Cl. 229-77.000.

Wisler, Lee Gail, to Electric Furnace, The. Heat treating furnace. 3,750,904, Cl. 214-21.000.

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Witz, Samuel, to Aerojet-General Corporation. Method for detecting the presence and concentration of heme containing particles and heavy metal ions in fluid media. 3,751,340, Cl. 195-103.50r.

Wo, Su-Lin, to Phillips Petroleum Company. Disproportionation of aromatic monocarboxylates. 3,751,456, Cl. 260-515.00p.

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Wolfgang, Niehaus. Temperature control circuit. 3,751,635, Cl. 219-499.000.

Wolfrom, Norman S., to Hardman Incorporated. Hand-held extruding apparatus. 3,750,905, Cl. 222-23.000.

Wood, Charles D., to Southwest Research Institute. Explosive seismic energy source with quick release valve. 3,750,837, Cl. 181-.50h.

Wood, Prentice J., to Mead Corporation, The. Article carrier and method of interlocking a pair of panels in face contacting relation. 3,750,363, Cl. 53-32.000.

Woodward, Roger V. Adjustable width folding door. 3,750,737, Cl. 160-206.000.

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Wu, William W., to Communications Satellite Corporation. Generalized shift register pulse sequence generator. 3,751,648, Cl. 235-152.000.

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Wyon, Andrew Stewart, to Stothert & Pitt Limited. Twistlock device for load handling apparatus. 3,751,096, Cl. 294-67.00r.

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Yamamura, Takashi, to Victor Company of Japan, Ltd. Channel Indicator. 3,750,619, Cl. 116-124.100.

Yamanaka, Torakiyo; Shigeta, Yoshihiro; and Suzaki, Kuniyoshi, to Canon Kabushiki Kaisha. Stripping and feeding device for strip material. 3,750,977, Cl. 242-192.000.

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Zadra, Mario D., to Goodyear Tire & Rubber Company, The. Hydrogenation process. 3,751,515, Cl. 260-683.900.

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Zankowski, John S., to Eastman Kodak Company. Electrolytic cell for recovering metal from a solution containing ions thereof, and method for operating same. 3,751,351, Cl. 204-109.000.

Zaun, Richard David; and Clausen, Howard Fred, to Deere & Company. Beet-cleaning and conveying apparatus. 3,750,211, Cl. 15-3.110.

Zbikowski, Theodore H.; and Pauly, Ronald R., to Tonka Corporation. Wheeled toy with sounding rasp and rotating head member. 3,750,329, Cl. 46-107.000.

Zecher, David C., to Hercules Incorporated. Scale and corrosion control in circulating water using polyphosphates and organophosphonic acids. 3,751,372, Cl. 252-181.000.

Zechnall, Richard, to Bosch, Robert, GmbH. Electronic control for the air-fuel mixture and for the ignition of an internal combustion engine. 3,750,632, Cl. 123-32.0ea.

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Breen, Alvin L., and M. Sussman, to E. I. du Pont de Nemours and Co. Fluid jet process for twisting yarn. Re. 27,717, 8–7–73, Cl. 57—157.

Brumlik, George C. Self-gripping fastening device. Re. 27,725, 8–7–73, Cl. 24—204.

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Jennings, Thomas C., to The Lubrizol Corp. Crosslinking of unsaturated polyesters with N-3-oxohydrocarbon-substituted acrylamides. Re. 27,722. 8–7–73, Cl. 204—159.15.

Jackson, Byron, Inc.: *See*—
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Johnson, Noal E., to Jackson, Byron, Inc. Power drill pipe and drill collar spider. Re. 27,724, 8–7–73, Cl. 24—263.

Klock, John W., to Research Corp. Method and apparatus for treating waste-containing liquor. Re. 27,721, 8–7–73, Cl. 210—14.

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Santilli, Ermanno. Annular saw with circular safety guard. Re. 27,716, 8–7–73. Cl. 30—389.

Sennewald, Kurt, W. Vogt, J. Kandler, R. Sommerfeld, and G. Sorbe, to Knapsack Aktiengesellschaft. Process for preparing unsaturated nitriles. Re. 27,718, 8–7–73, Cl. 260—465.3.

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Bakasi, Alexander L. Balancing bird toy. 228,081, 8–7–73, Cl. D34—15.

Beer, Allan T., to Darrell-Allan Corp. Underwater light. 228,084, 8–7–73, Cl. D48—24.

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Horgan, William J., to Blumcraft of Pittsburgh. Combined door handle and lock housing. 228,060, 8–7–73, Cl. D8—138.

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Kasper, Joseph G., and J. N. Polvka, to Tennant Co. Scrubbing machine. 228,087, 8–7–73, Cl. D49—9.

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Koshiro, Akiyoshi, and Y. Kawata, to Matsushita Electric Industrial Co. Ltd. Microwave oven. 228,056, 8–7–73, Cl. D7—128.

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Longarzo, Roland, to Consolidated Foods Corp. Combined memo pad holder, writing instrument and holder therefor. 228,083, 8–7–73, Cl. D45—9.

Lovitz, David D., to Sternco Industries Inc. Filter for home aquarium. 228,073, 8–7–73, Cl. D30—9.

MacKenzie, Norma E. Toy comforter or the like. 228,077, 8–7–73, Cl. D34—4.

Marshall, Leslie. Luggage bag. 228,099, 8–7–73, Cl. D87—5.

Marshall, Leslie. Luggage bag. 228,100, 8–7–73, Cl. D87—5.

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Matteson, David S. Toy finger puppet. 228,074, 8–7–73, Cl. D34—2.

Miller, Glenn O., to Shield Mfg., Inc. Protective mouthpiece. 228,048, 8–7–73, Cl. D2—233.

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Zelenko, Harry. Animal figure punch-out board. 228,075, 8–7–73, Cl. D34—2.

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2.1R 3,751,376

CLASS 28
1.4 3,750,242

CLASS 29
25.35 3,750,243
27R 3,750,244
39 3,750,245
130 3,750,246
148.4D 3,750,250
149.5NM 3,750,249
157R 3,750,247
157.3R 3,750,248
173 3,750,251
191.6 3,750,252
196.3 3,750,253
200B 3,750,255
200P 3,750,254
208B 3,750,256
212R 3,750,257
221.5 3,750,258
401 3,750,259
408 3,750,260
427 3,750,261
3,750,262
470.3 3,750,263
471.3 3,750,265
474.3 3,750,264
490 3,750,266
507 3,750,267
558 3,750,272
571 3,750,268
580 3,750,269
3,750,270
587 3,750,271
596 3,750,273
603 3,750,274
605 3,750,275
622 3,750,276
624 3,750,277
628 3,750,278

CLASS 30
43.9 3,750,279
85 3,750,280
90.8 3,750,281
254 3,750,282
338 3,750,283
346.58 3,750,285
380 3,750,284
389 Re.27,716

CLASS 31
46 3,750,286

CLASS 32
3 3,750,287
14A 3,750,288
32 3,750,289

CLASS 33
1R 3,750,290
2A 3,750,291
20D 3,750,293
41D 3,750,292
147L 3,750,294
166 3,750,296
172R 3,750,298
174L 3,750,295
3,750,297
287 3,750,299
324 3,750,300
379 3,750,301

CLASS 34
9.5 3,750,303
54 3,750,304
56 3,750,305
69 3,750,306
154 3,750,302

CLASS 35
35J 3,750,307
45 3,750,308
53 3,750,309

CLASS 36
2.5AL 3,750,310

CLASS 37
188 3,750,311

CLASS 38
102.2 3,750,312

CLASS 40
63 3,750,313
125H 3,750,314
137 3,750,316
158 3,750,315
310 3,750,317

CLASS 42
1S 3,750,318
70F 3,750,319

CLASS 43
15 3,750,320
42.1 3,750,321
42.14 3,750,325
42.25 3,750,322
42.28 3,750,323
44.88 3,750,324
131 3,750,326
139 3,750,327

CLASS 44
58 3,751,235
66 3,751,234
3,751,236

CLASS 46
1K 3,750,328
107 3,750,329
119 3,750,330

CLASS 49
35 3,750,331
74 3,750,332
177 3,750,334
220 3,750,335
371 3,750,336
411 3,750,337
413 3,750,338
501 3,750,333

CLASS 51
8 3,750,341
9 3,750,339
12 3,750,340
34R 3,750,342
50R 3,750,343
97R 3,750,344
101R 3,750,345
134 3,750,346
206.5 3,750,347
309 3,751,237
391 3,750,348

CLASS 52
23 3,750,349
27 3,750,350
64 3,750,351
79 3,750,366
204 3,750,356
236 3,750,354
282 3,750,352
309 3,750,355
400 3,750,358
468 3,750,359
714 3,750,360
745 3,750,353

CLASS 53
13 3,750,364
22A 3,750,362
29 3,750,365
32 3,750,361
3,750,363
180 3,750,367
329 3,750,357

CLASS 54
8 3,750,368

CLASS 55
20 3,750,369
71 3,750,372
146 3,750,373
223 3,750,375
279 3,750,370
419 3,750,371
484 3,750,374

CLASS 56
10.4 3,750,376
3,750,377
10.5 3,750,378
400.18 3,750,379

CLASS 57
58.91 3,750,381
3,750,382
58.95 3,750,380
157TS Re.27,717

CLASS 58
30 3,750,386
50R 3,750,383
3,750,384
58 3,750,385
90B 3,750,387
90R 3,750,388
144 3,750,389

CLASS 59
78 3,750,390

CLASS 60
24 3,750,391
36 3,750,393
39.14 3,750,394
39.36 3,750,397
39.37 3,750,398
39.74R 3,750,396
39.82S 3,750,392
73 3,750,395
108 3,750,399
261 3,750,402
269 3,750,400
286 3,750,401
323 3,750,403
413 3,750,404
422 3,750,405
442 3,750,406

CLASS 61
2 3,750,408
41A 3,750,409
3,750,410
42 3,750,407
43 3,750,411
46 3,750,412

CLASS 62
42 3,750,413
55 3,750,414
93 3,750,415
101 3,750,416
114 3,750,417
141 3,750,419
290 3,750,418
331 3,750,420
476 3,750,421

CLASS 64
11R 3,750,422
23 3,750,423
31 3,750,424

CLASS 65
30 3,751,238

CLASS 66
86 3,750,425
149R 3,750,426
172R 3,750,427

CLASS 68
3SS 3,750,428
12R 3,750,429

CLASS 70
1.5 3,750,430
21 3,750,431
38R 3,750,432
146 3,750,433
172 3,750,434
272 3,750,435

CLASS 71
118 3,751,239

CLASS 72
8 3,750,436
12 3,750,437
39 3,750,438
43 3,750,439
56 3,750,440
3,750,441
57 3,750,442
72 3,750,443
78 3,750,444
144 3,750,445
181 3,750,446
247 3,750,448
288 3,750,449
319 3,750,447
353 3,750,450
393 3,750,451
402 3,750,452
3,750,453
441 3,750,454
466 3,750,455

CLASS 73
1E 3,750,456
12 3,750,457
45.1 3,750,458
49.4 3,750,459
61.1R 3,750,460
67.5 3,750,461
67.7 3,750,462
113 3,750,463
117 3,750,464
117.3 3,750,465
159 3,750,466
169 3,750,467
194EM 3,750,468
194F 3,750,469
205D 3,750,472
212 3,750,470
342 3,750,471
379 3,750,479
386 3,750,474
387 3,750,473
398AR 3,750,475
398C 3,750,476
421B 3,750,477
423R 3,750,478
506 3,750,480
515 3,750,481
521 3,750,482

CLASS 74
50 3,750,483
84.5 3,750,484
125.5 3,750,485
230.17E 3,750,486
242.8 3,750,487
337 3,750,488
434 3,750,489
469 3,750,490
523 3,750,492
625 3,750,491
720 3,750,493
820 3,750,494
866 3,750,495

CLASS 75
1 3,751,240
3 3,751,241
49 3,751,242
63 3,751,243
128G 3,751,244
130.5 3,751,245

CLASS 80
454 3,750,514

CLASS 81
52.35 3,750,500

CLASS 82
20 3,750,497
36R 3,750,498
39 3,750,499
59R 3,750,501
101 3,750,506

CLASS 83
9 3,750,502
16 3,750,503
3,750,504
54 3,750,505
169 3,750,507
177 3,750,508
198 3,750,509
305 3,750,510
337 3,750,511
356.3 3,750,512
425.4 3,750,513
599 3,750,515

CLASS 84
1.18 3,751,573
94 3,750,520
380 3,750,521
422 3,750,517
423 3,750,522
470 3,750,516
476 3,750,524

CLASS 85
12 3,750,496
28 3,750,523
68 3,750,518
77 3,750,519
79 3,750,526

CLASS 86
1 3,750,527
37 3,750,528

CLASS 89
1.8 3,750,529
1.87 3,750,530
148 3,750,531

CLASS 91
3 3,750,532
498 3,750,533
506 3,750,534

CLASS 92
121 3,750,535
165 3,750,536
3,750,537

CLASS 93
94R 3,750,538

CLASS 95
1.1 3,750,553
4.5R 3,750,539
4.5 3,750,554
10CE 3,750,543
10CT 3,750,540
3,750,546
10C 3,750,544
11UW 3,750,547
11L 3,750,550
11R 3,750,548
3,750,549
11 3,750,551
11.5R 3,750,552
18R 3,750,541
31CA 3,750,542
31FM 3,750,545

CLASS 96
1.5 3,751,246
3,751,247
36 3,751,250
36.2 3,751,248
50A 3,751,251
50R 3,751,249
63 3,751,252
66R 3,751,255
67 3,751,253
76C 3,751,256
76R 3,751,254
81 3,751,258
91R 3,751,257
115P 3,751,259

CLASS 98
2.01 3,750,555
2.11 3,750,556
33 3,750,557
40D 3,750,558

CLASS 99
2ND 3,751,262
11 3,751,261
14 3,751,260
31 3,751,263
48 3,751,264
50.5 3,751,266
81 3,751,267
100 3,751,268
139 3,751,265
140R 3,751,269
141A 3,751,270
279 3,750,559
408 3,750,560

CLASS 100
89 3,750,561
100 3,750,562
194 3,750,563

CLASS 101
1 3,750,564
93C 3,750,565
144 3,750,566
181 3,750,567
248 3,750,568
269 3,750,569
364 3,750,570
415.1 3,750,571
3,750,572
3,750,573

CLASS 102

16 3,750,586
34.1 3,750,574
37.6 3,750,577
38 3,750,578
42C 3,750,580
49.7 3,750,581
56 3,750,582
67 3,750,587
69 3,750,575
70.02G 3,750,576
70.2P 3,750,588
70.2R 3,750,583
3,750,584
79 3,750,589
81 3,750,590
87 3,750,585
95 3,750,579

CLASS 104

112 3,750,591
138 3,750,592
172BT 3,750,593
243 3,750,594

CLASS 105

376 3,750,595

CLASS 106

38.3 3,751,276
40R 3,751,271
47Q 3,751,272
57 3,751,273
68 3,751,274
90 3,751,275
213 3,751,277
273R 3,751,278
288Q 3,751,279

CLASS 108

43 3,750,596
45 3,750,597
51 3,750,598
161 3,750,599

CLASS 110

1R 3,750,600

CLASS 112

121.12 3,750,601
252 3,750,603
265 3,750,604
3,750,605
267 3,750,602

CLASS 113

1F 3,750,606

CLASS 114

65R 3,750,607
103 3,750,608
206A 3,750,609
210 3,750,610
218 3,750,611
221 3,750,612

CLASS 115

.5R 3,750,613
17 3,750,614
18R 3,750,621
18 3,750,615
35R 3,750,616
41R 3,750,617

CLASS 116

115.5 3,750,618
124.1 3,750,619

CLASS 117

7 3,751,280
3,751,281
13 3,751,282
22 3,751,283
28 3,751,284
34 3,751,285
36.2 3,751,286
47A 3,751,287
111R 3,750,746
114B 3,751,288
126R 3,751,291
130R 3,751,289
140A 3,751,290
212 3,751,292
217 3,751,293
226 3,751,294
227 3,751,295
230 3,751,296

CLASS 118

48 3,750,620
49.5 3,750,623
326 3,750,622
637 3,750,624

CLASS 119

1 3,750,625
44 3,750,627
51R 3,750,626
72.5 3,750,628

CLASS 122

6R 3,750,629

CLASS 123

8.19 3,750,630
32EA 3,750,631
3,750,632
102 3,750,633
119B 3,750,634
140MC 3,750,635
140MP 3,750,636
148E 3,750,637
3,750,638
187.5 3,750,639
198D 3,750,640

CLASS 124

23 3,750,641

CLASS 126

59.5 3,750,642
197 3,750,643

CLASS 128

4D 3,750,644
1.2 3,750,653
2B 3,750,646
2F 3,750,647
3,750,648
2G 3,750,645
2.06E 3,750,650
2.1Z 3,750,649
17 3,750,652
20 3,750,651
57 3,750,654
59 3,750,655
66 3,750,656
3,750,657
75 3,750,658
80R 3,750,659
89R 3,750,660
130 3,750,661
3,750,662
132D 3,750,663
3,750,664
146.6 3,750,665
156 3,750,666
215 3,750,667
227 3,750,668
287 3,750,669
303.1 3,750,670
305 3,750,671
376 3,750,672
465 3,750,673

CLASS 131

17R 3,750,674
21B 3,750,675
25 3,750,676
84C 3,750,678
140C 3,750,679
172 3,750,677

CLASS 132

11R 3,750,680
49 3,750,681
53 3,750,682
55 3,750,683
88.5 3,750,684

CLASS 134

30 3,751,297
57R 3,750,685
95 3,750,686

CLASS 136

6F 3,751,298
9 3,751,299
24 3,751,300
26 3,751,301
86E 3,751,302
89 3,751,303
158 3,751,304
221 3,751,305

CLASS 137

1 3,750,687
2 3,750,688
15.1 3,750,689
106 3,750,690
142 3,750,691
205 3,750,692
219 3,750,693
236 3,750,694
318 3,750,695
344 3,750,696
356 3,750,697
360 Re.27,726
375 3,750,698
494 3,750,699
498 3,750,700
606 3,750,701
608 3,750,702
614.04 3,750,703
614.18 3,750,706
625.17 3,750,708
625.47 3,750,704
625.48 3,750,707
625.64 3,750,705

CLASS 138

38 3,750,709
40 3,750,710
97 3,750,711
124 3,750,712

CLASS 139

12 3,750,713
16 3,750,714
110 3,750,715
122R 3,750,716
207 3,750,717

CLASS 140

92.1 3,750,718
92.2 3,750,719
149 3,750,720

CLASS 141

10 3,750,721
332 3,750,722
388 3,750,723

CLASS 144

28.1 3,750,724
178 3,750,725
240 3,750,726
312 3,750,727
315 3,750,728

CLASS 145

64 3,750,729

CLASS 148

33.3 3,751,306
127 3,751,308
171 3,751,309
175 3,751,310

CLASS 149

36 3,751,311
109 3,751,312

CLASS 150

8 3,750,730
52R 3,750,731

CLASS 151

2A 3,750,732

CLASS 152

175 3,750,733
220 3,750,734

CLASS 156

16 3,751,313
17 3,751,314
71 3,751,315
127 3,751,316
196 3,751,317
234 3,751,318
242 3,751,319
268 3,751,320
352 3,751,321
360 3,751,322
463 3,751,323
521 3,751,324
550 3,751,325

CLASS 159

16S 3,750,736
49 3,750,735

CLASS 160

206 3,750,737
342 3,750,738
354 3,750,739
3,750,740

CLASS 161

5 3,751,326
40 3,751,327
83 3,751,331
133 3,751,328
159 3,751,329
165 3,751,330
176 3,751,332

CLASS 164

82 3,750,741
276 3,750,742
283 3,750,743

CLASS 165

76 3,750,744
105 3,750,745
178 3,750,747

CLASS 166

55 3,750,748
95 3,750,749
187 3,750,750
224R 3,750,752
224S 3,750,751
309 3,750,753

CLASS 169

9 3,750,754
26 3,750,755

CLASS 172

4.5 3,750,756
9 3,750,757
58 3,750,758
285 3,750,759
374 3,750,760
719 3,750,761

CLASS 173

8 3,750,762
34 3,750,763
43 3,750,764
46 3,750,765

CLASS 174

48 3,751,576
50.58 3,751,577
52R 3,751,574
3,751,575
99B 3,751,578
153G 3,751,579

CLASS 175

50 3,750,766
53 3,750,767
72 3,750,768
85 3,750,769
173 3,750,770
269 3,750,771
364 3,750,772

CLASS 176

19R 3,751,333
36R 3,751,334
3,751,336
78 3,751,335

CLASS 178

5.4C 3,751,581
5.4R 3,751,580
3,751,589
3,751,590
6 3,751,582
3,751,583
6.6R 3,751,587
6.7A 3,751,584
6.8 3,751,585
7.1 3,751,586
7.2 3,751,593
7.3S 3,751,588
68 3,751,591
88 3,751,592

CLASS 179

5P 3,751,594
15AL 3,751,595
15AQ 3,751,597
15BC 3,751,596
81B 3,751,602
100L 3,751,600
100.11 3,751,601
100.2CA 3,751,603
100.2MD 3,751,598
100.2PM 3,751,604
100.2C 3,751,599
107R 3,751,605
175.2R 3,751,607
175.3 3,751,606
182R 3,751,608

CLASS 180

1F 3,750,773
5R 3,750,774
3,750,775
6R 3,750,776
3,750,777
9.36 3,750,778
9.62 3,750,779
79.1 3,750,833
79.2C 3,750,834
79.2R 3,750,836

CLASS 181

.5H 3,750,837
31B 3,750,838
33R 3,750,842
50 3,750,839
57 3,750,840
58 3,750,841

CLASS 182

72 3,750,843
121 3,750,844
127 3,750,845
141 3,750,846

CLASS 184

1E 3,750,847
6.16 3,750,848

CLASS 185

70 3,750,525

CLASS 187

16 3,750,849
29R 3,750,850

CLASS 188

26 3,750,851
107 3,750,852
196R 3,750,853
264R 3,750,854
269 3,750,855
287 3,750,856
345 3,750,857

CLASS 192

3R 3,750,780
18B 3,750,781
45 3,750,782
3,750,783
81C 3,750,784
3,750,785
85AB 3,750,787
105A 3,750,789
107R 3,750,788
146 3,750,786

CLASS 194

2 3,750,790

CLASS 195

28R 3,751,337
82 3,751,338
96 3,751,339
103.5R 3,751,340
139 3,751,341

CLASS 197

1R 3,750,792
6.7 3,750,791
19 3,750,793
49 3,750,794
68 3,750,795
107 3,750,796
176 3,750,797

CLASS 198

1 3,750,798
20R 3,750,799
33AA 3,750,800
43 3,750,801
115 3,750,858
136 3,750,859
144 3,750,860
159 3,750,861
189 3,750,862
3,750,863
201 3,750,864
211 3,750,865
220CB 3,750,866

CLASS 200

19DC 3,751,609
19R 3,751,610
48R 3,751,611
52R 3,751,612
61.08 3,751,613
84C 3,751,614
3,751,616
86R 3,751,615
144B 3,751,617
159R 3,751,618
166BH 3,751,619

CLASS 202

141 3,751,342

CLASS 204

15 3,751,343
26 3,751,346
28 3,751,344
29 3,751,345
51 3,751,347
55Y 3,751,348
56R 3,751,349
58 3,751,350
109 3,751,351
145R 3,751,352
158HE 3,751,353
159.15 Re.27,722
198 3,751,354
228 3,751,355
299 3,751,356
3,751,357

CLASS 206

1R 3,750,867
3,750,868
8 3,750,869
45.14 3,750,870
46FC 3,750,871
46FN 3,750,872
59R 3,750,873
63.2R 3,750,875
65E 3,750,874
65S 3,750,876

CLASS 208

11 3,751,358
61 3,751,360
155 3,751,359
255 3,751,361

CLASS 209

73 3,750,877
3,750,878
74R 3,750,880
3,750,881
111.6 3,750,882
3,750,883
284 3,750,884

CLASS 210

14 Re.27,721
33 3,751,362
107 3,750,885
111 3,750,886
150 3,750,887
172 3,750,888
497 3,750,889

CLASS 211

75 3,750,890
95 3,750,818
119.02 3,750,891
128 3,750,892
162 3,750,893
184 3,750,894

CLASS 212

48 3,750,895

CLASS 213

75R 3,750,896
211 3,750,897

CLASS 214

1Q 3,750,898
6B 3,750,900
6S 3,750,901
8.5F 3,750,806
11R 3,750,879
16.1EC 3,750,899
16.1ED 3,750,808
16.4A 3,750,804
17CC 3,750,902
17DB 3,750,903
21 3,750,904
38CC 3,750,803
38R 3,750,802
84 3,750,805
152 3,750,807
314 3,750,810
394 3,750,811
450 3,750,812
518 3,750,813
621 3,750,814
730 3,750,815
767 3,750,816

CLASS 215

9 3,750,817
13R 3,750,819
42 3,750,820
3,750,821
52 3,750,822

CLASS 219

67 3,751,623
69S 3,751,622
70 3,751,625
85 3,751,624
103 3,751,621
118 3,751,626
131R 3,751,627
137 3,751,628
201 3,751,629
211 3,751,620
345 3,751,630
390 3,751,633
485 3,751,631
492 3,751,632
497 3,751,634
499 3,751,635

CLASS 220

3 3,750,823
20.5 3,750,824
35 3,750,825
55G 3,750,826
74 3,750,827

CLASS 221

2 3,750,828
8 3,750,829
81 3,750,830
188 3,750,831
211 3,750,832

CLASS 222

23 3,750,905
74 3,750,906
80 3,750,908
107 3,750,907
148 3,750,909
239 3,750,910
254 3,750,911
359 3,750,912
387 3,750,913
543 3,750,914
567 3,750,915

CLASS 223

37 3,750,916
74 3,750,917

CLASS 224

5E 3,750,918

CLASS 226

9 3,750,919
23 3,750,920
62 3,750,921
97 3,750,922
112 3,750,923
174 3,750,924

CLASS 227

18 3,750,925

CLASS 228

1 3,750,926
2 3,750,927
44 3,750,928

CLASS 229

15 3,750,929
17B 3,750,930
37R 3,750,931
3,750,932
39B 3,750,934
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52AW 3,750,936
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	233	228,048		129	228,057			228,067		4	228,077		24	228,084	D61—		228,094
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	181	228,051	D 8—	138	228,060			228,070			228,080	D52—	6	228,088	D87—	1	228,101
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	98	228,054	D16—		228,064	D34—	2	228,074			228,083			228,092	D90—	20	228,102
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Frederick B. Dent, *Secretary*